

Who Is Afraid of Volume 1181 of the New York Academy of Sciences? Under Threat, the Nuclear Establishment Plays Dirty

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Abstract

Following decades of an internationally coordinated cover-up, critical information about the health consequences of the Chernobyl accident, worldwide but particularly in Western and Eastern Europe, was made available through Volume 1181 of the *Annals of the New York Academy of Sciences*. The book also contains unique, valuable data from the 3 most affected counties, and it suggests that consequences of the Chernobyl accident are far more serious than has been acknowledged. Many health problems are worsening, including those resulting from irreversible genetic damage. Given the threat that such information represents to the nuclear establishment, it was predictable that Volume 1181, of far higher scientific quality than the United Nations' flagship report *The Chernobyl Forum*, would meet with violent criticism. Since its publication in 2009, it has been misrepresented and discredited by the nuclear establishment and international health establishment – to the extent of making the absurd and false claim that the *New York Academy of Sciences* has in some way disowned its own publication. *The New York Academy of Sciences* defends publication of Volume 1181 on the grounds of its commitment to open discussion of scientific material and publication of material of scientific value.

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Six decades of a high-level, institutional, and internationally coordinated cover-up have deprived the world's people of critically important medical and scientific information about the health consequences of nuclear activities, industrial, and military. A good part of that information is contained in Volume 1181 of the *Annals of the New York Academy of Sciences* (NYAS).¹ The book suggests that the health consequences of the Chernobyl accident are far more serious than has been acknowledged by the nuclear establishment. The overall conclusions can be summarized as follows.

In Ukraine, Belarus, the Russian Federation, and many other countries contaminated to varying degrees by radionuclides from Chernobyl, there has been a significant increase in all types of cancer; diseases of the respiratory, cardiovascular, gastrointestinal, urogenital, endocrine, immune, lymphoid, and nervous systems; prenatal, perinatal, infant, and child mortality; spontaneous abortion, deformities, and genetic anomalies; disturbance and retardation of mental development; neuropsychological illness; and blindness.

The increases are not trivial and cannot be dismissed. They are not increases of a few percent, as suggested by the lobby through its report *The Chernobyl Forum*.² Rates of illness have doubled, tripled, quadrupled, or more for certain conditions. Worse, many adverse health effects are increasing rather than decreasing, including genetic effects that are, of course, irreversible.

Unsurprisingly, Volume 1181 of the *Annals of the NYAS* has met with violent criticism in the mainstream press and medical journals. Since its publication in 2009, the work has been misrepresented and discredited by the nuclear establishment and, to their eternal shame, the international health establishment – to the extent of making the absurd and false claim that the NYAS has in some way disowned its own publication.

This claim is based on an unusual statement issued by the NYAS in relation to its publication on Chernobyl (posted April 28, 2010),³ which says that “in no way did the NYAS commission this work” and that it “has not been formally peer-reviewed by the NYAS or by anyone else.” By quoting these 2 phrases and ignoring the rest of the statement, critics have misrepresented the position of this venerable institution.

The New York Academy of Sciences Defends Its Decision to Publish Controversial Volume 1181

In fact, as the following excerpt from the statement shows, the NYAS is keen to insist that Volume 1181 was published in the context of the Academy's commitment to open discussion of scientific material and to the publication of

material of scientific value: “Although the New York Academy of Sciences believes it has a *responsibility to provide open forums for discussion of scientific questions*, the Academy has no intent to influence legislation by providing such forums. The Academy is *committed to publishing content deemed scientifically valid by the general scientific community*, from whom the Academy carefully monitors feedback” (author emphasis).

Why did the NYAS issue this unusual statement? It may have come under pressure *not* to publish this book. Once published, it was likely to have come under pressure to distance itself from it. Certainly, the statement above that “the Academy has no intent to influence legislation by providing such forums” is odd but what it suggests is a threat of legal action and an attempt to protect itself from such action.

Volume 1181 Is of Higher Scientific Quality Than the United Nations Chernobyl Forum

It is frequently claimed that the NYAS publication on Chernobyl is “not peer-reviewed.” This is a misleading criticism because books are not peer-reviewed in the sense that is intended by these critics, that is, based on articles published in peer-reviewed scientific and medical literature (Publication in a peer-reviewed journal is regarded as the “gold standard” of scientific quality. Today, the value of peer review is somewhat in doubt because so many scientific and medical journals, university departments, and researchers are funded by the private sector, but this issue is beyond the scope of this article).

In the NYAS book, as in any other review of current knowledge, studies undertaken in countries all over the world are described, summarized, or mentioned – and referenced. From a sample analysis, there appears to be a higher percentage of references to articles in the peer-reviewed literature in the NYAS publication than in the flagship report of the World Health Organization (WHO), International Atomic Energy Agency (IAEA), United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), and the Chernobyl Forum’s volume on *Health Effects*.

The group IndependentWHO – Health and Nuclear Power (IWHO) undertook an analysis (details of the analysis are available from katz.alison@gmail.com.) of the proportion of references to articles published in the peer-reviewed scientific and medical literature in the respective chapters on mortality in the NYAS and Chernobyl Forum publication. The comparison is as follows:

- NYAS: 112 references, of which 46 are published in peer-reviewed journals. *Just over 40% are in peer-reviewed journals.*
- Chernobyl Forum: 11 references (yes, just 11, scarcely worth calculating a percentage), of which 2 are in peer-reviewed journals. Five of the 11

references are from 1 author and 2 are personal communications! *Just over 18% are in peer-reviewed journals.*

If these percentages are representative of the 2 books as a whole, the critics of Volume 1181 should be deeply concerned about the competence of the international health authority in the area of radiation and health. Unfortunately, that “authority” today is not the WHO but the IAEA– which has no mandate in public health (See independentwho.org for background information on the subordination of the WHO to the IAEA in matters of radiation and health. Restoring competence and authority in radiation and health is the *raison d'être* of IWHO – Health and Nuclear Power, a collective that demands the complete independence of the WHO from the nuclear establishment and in particular from its mouthpiece, the IAEA.).

Part of the mandate of the IAEA, however, is to promote (peaceful) use of the atom. As such, it is an industrial and commercial lobby and there is an evident conflict of interest in the role it has assumed (or been accorded by the nuclear powers) in evaluating the health effects of nuclear activities.

The world’s people need to know that today, there is no credible or competent international health authority on the hazards of radiation. The situation is no better at the national level, as the Japanese government has illustrated, riding roughshod over international radioprotection norms and its own population and floundering in the face of evidence that – with the best will in the world – it cannot control this technology. It is uncontrollable *and has been knowingly uncontrolled for more than 60 years.*

Unlike the Chernobyl Forum, Volume 1181 Reports on Health Effects in Western Europe

Volume 1181 is commonly misrepresented as an English translation of various studies undertaken in countries of the former Soviet Union (and originally published in Russian). The book contains no translation of studies. It presents 5–15 line summaries of more than 500 studies reporting health effects, *from all over the world*, even the United States (Although the Americas were one of the least contaminated continents, excellent data collection and records in the United States allowed detection of slight but significant increases in certain adverse health effects.). Under each chapter, summaries of studies of the health or environmental consequences are presented, starting with the 3 most affected countries and followed by other countries of the world, *notably Western European countries.*

It is worth remembering that 57% of the fallout was deposited outside the Soviet Union. Western Europe (among other regions) was seriously contaminated by Chernobyl and suffered measureable health effects *that have been studied and reported.* In 13 European countries, more than 50% of the territory was

dangerously contaminated, and in 8 countries the figure is 30%. Furthermore, as an indication of the likely dimensions of the health effects, remember that the quantity of radionuclides released from Chernobyl was several hundred times that of Hiroshima and Nagasaki combined.

Despite the global nature of the catastrophe, and in particular the significant contamination of vast areas of Europe, the United Nations Chernobyl Forum considers only 3 groups: the liquidators, populations living in the most contaminated areas, and populations that were evacuated. As the authors of Volume 1181 point out, there is no scientific or moral justification for the failure to present any evidence on the health and environmental consequences of Chernobyl for the rest of the population in the 3 above-mentioned countries, for populations elsewhere in Europe, and for populations everywhere in the path of the fallout.

There may be no justification for the omission but there is an obvious explanation. Reports of adverse health effects in Western Europe might result in public protest (and restrictions on activities), a troublesome eventuality that is less likely to occur in Eastern Europe.

All Former Soviet Union Scientists and Medical Professionals Are Profiteers or Incompetents?

With astonishing arrogance, the international health community (which, like the term “international community,” refers merely to a handful of its most powerful members) more or less dismisses all scientific and medical information on nuclear matters emanating from countries of the former Soviet Union: Belarus, Ukraine, and Russia – unless, of course, it is supplied by representatives of the nuclear establishment of those countries. It has been suggested that health consequences have been exaggerated or invented by the populations of the 3 countries in order to obtain aid/compensation. And it is claimed that their science does not meet Western standards.

This particular dirty trick is not new. When challenged on the nonpublication of the Proceedings of its International Conference on Chernobyl in 1995, the WHO claimed that it “takes into account only peer-reviewed studies of the highest scientific quality.” As only 12 were published,⁴ are we to conclude that 688 of the 700 contributions to the conference were of unacceptably low quality?

Likewise, the WHO appears to take no notice whatsoever of reports from its own Member States. Data from the Ministry of Health of Ukraine showed that 15–20 years after the catastrophe, there was a dramatic increase in mortality in the most affected groups – the clean-up workers (liquidators) and populations in the most contaminated territories.⁵ Similarly, Russia reported that between 1986 and 2001, more than 10 000 of its 200 000 liquidators had died.⁶ Given that the average age of liquidators at the time of the accident was 33 years, many of these

were premature deaths. Nevertheless, the WHO in the Chernobyl Forum persisted in reproducing the establishment's ludicrous figure of around 50 dead and *possibly* 4000 deaths from cancer *in total* in the future.

Did the New York Academy of Sciences Publish Volume 1181 by Mistake?

As a general rule, it is enough for critics to state that Volume 1181 deals with studies written originally in Slav languages and published in journals (frequently described as “obscure,” perhaps because not published in English) for the entire work to be disqualified. Let us look at this preposterous attitude more closely.

No one would deny that since the fall of the Soviet Union, scientific standards – which were recognized at the time as among the highest in the world – are likely to have fallen. The savage capitalism that was imposed on the population has devastated public services, including the health and education sectors, and, inevitably, resources for academic and research institutes have been substantially reduced.

However, are we expected to believe that there are *no competent* scientists or medical professionals in Belarus, Ukraine, or Russia, nor any decent peer-reviewed scientific and medical journals; that *no serious* studies on the impact of the Chernobyl accident were undertaken in the three countries most affected by the catastrophe; or that the authors of the book, respected scientists in their own right (Professor Alexei Yablokov, member of the Russian Academy of Sciences and a marine biologist by training, is a world-renowned environmental scientist and a Counselor for Ecology under President Yeltsin. He serves as a consultant on ecological matters for government and is invited regularly to present at international conferences. Professor Vassili Nesterenko [deceased in 2008] was a nuclear physicist, working at the highest level in the former Soviet Union. He was director of the Belarusian Nuclear Centre and chief design engineer of the Soviet Union's mobile nuclear power plant. When the Chernobyl accident happened, he abandoned a brilliant career to devote his life to the care of victims, especially children, and to independent research on the health effects of the accident through BELRAD, the independent institute that he founded with Dr Sakharov. Dr Alexei Nesterenko is an environmental scientist and has been director of BELRAD since the death of his father.), have put together a 300-page book with 800 references and yet failed to consider any reliable studies undertaken in their own countries by their own colleagues?

Finally, are we seriously expected to believe that the NYAS published a book on Chernobyl by mistake?

Of course not! In addition to perusing the hundreds of references for each chapter of the NYAS book, the editors will have also consulted the US Library of Medicine's bibliographic database of life sciences and biomedical information – Medline (Medline: Medical Literature Analysis and Retrieval System.

Medline is the reference for consultation of the peer-reviewed medical literature worldwide.), as any member of the public can do, *as critics should have done*, and as IWHO – Health and Nuclear Power has done with the following results.

On 2 sample pages of references (134 and 135), among studies published in Russian (or another Slav language), we searched author citations on Medline. The objective was to determine if the authors were cited on Medline, not necessarily in connection with the study described and referenced in the NYAS book, but *in connection with any study*. Any such citation would establish that the authors of studies referenced in the NYAS book are researchers who publish in the internationally recognized peer-reviewed literature. On the 2 pages, among 17 references to studies published in Russian, 13 (76%) included authors who were cited on Medline.

Unique and Valuable Data Suppressed, Ignored, and Now Rubbished

The NYAS book includes approximately 800 references. Like other scientific and medical publications, the references include:

- articles published in peer-reviewed scientific journals;
- reports published by United Nations organizations (such as UNSCEAR, IAEA, WHO, etc);
- reports published by national authorities (such as the Committee on the Biological Effects of Ionizing Radiation, National Council on Radiation Protection and Measurements);
- reports published by international authorities (such as International Commission on Radiological Protection);
- papers published by scientific institutes, etc;
- reports published by nongovernment organizations (such as International Physicians for the Prevention of Nuclear War, Greenpeace); and
- studies presented at international scientific conferences.

Critics of Volume 1181 dismiss the last two categories out of hand. In the case of International Physicians for the Prevention of Nuclear War and Greenpeace reports, this indicates political bias unless critics can show that the experts consulted are not qualified scientists or medical professionals. In the case of international scientific conferences, it is common for papers to be presented that have not yet been published. Indeed, such conferences often provide “previews” of preliminary results of ongoing studies.

Of course, in the case of conferences on Chernobyl (or any other accident) that are *not organized by the establishment*, many studies presented may never be accepted for publication because, as discussed above, reports of health effects represent a significant threat to the industry, which controls the major journals.

Such studies have often been dismissed on the grounds that data were collected without observing “scientific protocols.” In fact, Professor Yablokov, who has considerable experience in statistical processing of such data, shows that this criticism is often unfounded.^{1(p37)} He asks why it is necessary to calculate “significance of difference” among liquidators’ morbidities for 1987 and 1997 when the averages differ tenfold. He also explains that “the doctors and scientists who collected such data were, first of all, trying to help the victims, and second, owing to lack of time and resources, they were not always able to offer their findings for publication.”^{1(p37)} Working selflessly for years in contaminated territories, many doctors and scientists suffered serious health problems themselves and died prematurely, another (tragic) reason why their findings were not always published.

Critics dismiss academic theses, abstracts from conferences, and important data released by officials during press conferences (such as the number of thyroid operations undertaken in countries, or information on levels of radioactive contamination in foodstuffs) but never presented in scientific papers, but these are unique sources of information, referenced in Volume 1181. A huge body of evidence on the consequences of the world’s most serious industrial accident continues to be ignored *because it is not in the form of Western scientific protocols?*

There is no excuse for failing to use the raw data. These were successfully suppressed for 25 years and now that their existence is known, they are being rubbished. The international scientific community, and in particular the WHO, has a duty to take this valuable and irreplaceable raw data and perform the necessary statistical analysis to establish the facts in this controversy and, at last, to provide reliable policy guidance to its Member States.

985 000 or 4000? Why the Discrepancies?

The official estimates of the health problems (morbidity and mortality) in the regions affected by Chernobyl differ from those of various independent researchers by a factor of 100, sometimes even 1000. These massive discrepancies exactly parallel the source of the “science” – ie, whether it emanates from the nuclear establishment (including the academic and research institutions it controls) or from independent researchers.

The discrepancies are well in excess of the normal scientific margin of uncertainty. They result partly from comparing figures that are not in fact comparable (see below). Beyond that, they suggest a cover-up or substantial underestimation of the risks to health of low-level radiation – or, most likely, both.

In terms of mortality, the Chernobyl Forum estimates that “a total of 4000 people could eventually die of radiation exposure from the Chernobyl power plant accident” and presents this, misleadingly in the press release,⁷ as a final verdict *without specifying that this figure refers to 3 sub-populations (605 000 people) of the 3 most affected countries.*

Comparing the Incomparable

On the basis of studies undertaken *all over the world*, the authors of Volume 1181 estimate that between 1987 and 2004, Chernobyl contamination caused 985 000 deaths. Instead of considering how the authors arrived at this estimate, the lobby has pounced triumphantly on the figure of nearly 1 million deaths as evidence that the book cannot possibly be taken seriously (WHO itself states in the Chernobyl Forum^{2(p67)} that “the only sensible way to estimate those risks is to use extrapolation from observations made in studies conducted among high-dose populations.” This is what Yablokov, Nesterenko, and Nesterenko have done. Why then has Volume 1181 provoked such a furor? It should also be noted that the estimate of nearly 1 million deaths is not the salient “fact” of this book. The authors argue simply that the mass of evidence that has accumulated from independent studies by researchers and medical practitioners suggest a far higher toll in both morbidity and mortality and that these data form an essential part of the scientific knowledge on health and environmental effects of the world’s worst industrial accident.). It is a cheap trick and a highly effective one, but it would be a mistake not to examine the reasons for the discrepancies.

First, incomparable figures are being compared, largely because of multiple omissions from the United Nations Chernobyl Forum’s analysis. Second, as discussed below, radiation risk is an area of heated scientific controversy and estimates emanating from “official sources” are based on what are increasingly seen – even by members of the nuclear establishment itself – as erroneous assumptions (the wrong model) that have led to a serious underestimation of risk.

A good part of the discrepancy in estimates of deaths is due to the size of the respective populations considered. The WHO’s special health report,² as mentioned above, restricts consideration of health effects to 3 sub-populations of the 3 most affected countries (605 000 people), whereas Volume 1181 includes consideration of health effects on the world’s population (7 billion people), because, and as noted above, most (57%) of the fallout was deposited outside the former Soviet Union.

Second, the WHO has more or less disallowed consideration of health conditions other than cancer (almost exclusively thyroid cancer, with belated inclusion of leukemia) and certain, carefully defined birth defects. This is despite the fact that it has been known for more than 50 years that radioactive contamination has multiple health effects. Indeed, because of its effects on the immune system, every organ system is affected, resulting in increases in all kinds of known illnesses in addition to illnesses specific to radioactive contamination.

Third, the nuclear establishment ignores total exposures over time *past, present, and future*. In particular, the initial massive dose received at the time of the accident is rarely considered, thereby hugely underestimating the contamination of populations and making it even more difficult to establish correlations

between dose received and observed health effects. The role of “hot particles” has been ignored, as has the interaction between chemical and radioactive pollution and, in particular, in the area of Chernobyl, the effect of thousands of tons of lead used to extinguish the fire.

Radioprotection Norms Based on Knowledge That Predates the Discovery of DNA

In addition to omissions in terms of geographical spread, range of health conditions, the initial massive dose, the role of hot particles, and other matters, there are further limitations in scope in the nuclear establishment’s assessment of health effects. Most significantly, the role of chronic, internal, low-dose radiation – denied until very recently – has been systematically underestimated, although it accounts for 95% of the contamination of populations ingesting radionuclides through food.

Under current models, exposures are averaged over entire populations, ignoring local sources of concentrated contamination – a procedure that is as meaningless as averaging the temperatures of patients in a hospital ward. In the same way, internal contamination is averaged over the whole body, ignoring heterogenous energy deposition at the cellular and sub-cellular level and the fact that different radionuclides concentrate in different organs. This approach has been likened to “emptying a Colt 45 into a football stadium and averaging the effects of the six bullets across all 25000 spectators. The assumption that between them, 25000 people should be able to stop six bullets without any of them feeling more than a tap on the shoulder will not console the six grieving families.”⁸

In short, radioprotection norms are based on an outdated model that applies to a single, massive external radiation event such as occurred at Hiroshima. These norms are roughly adequate for external radiation (but only for a limited number of radionuclides), but they are meaningless in the context of low-dose, internal, chronic radioactive contamination from many radionuclides – which is the concern in the case of nuclear accidents and routine functioning of power plants.

The Logical Impossibility of Health Effects From Chernobyl

In relation to the omission of populations from its analysis, the WHO will respond that it only considered populations that were exposed to levels of radiation *known to produce health effects*. The logic is as follows: “If you find health effects in populations exposed to levels of radiation that *we know* do not produce health effects, then they must be due to something other than radioactive pollution.”

In contrast, the logic of independent researchers – and indeed of epidemiology – is as follows: “Having controlled for all other possible factors, if significant unexplained health effects are observed, the possibility must be considered that populations were exposed to higher doses than were reported (or declared), or that the effects on health of low-level radiation are more serious than was previously thought – *or both*.”

Finally, the establishment imposes an impossible burden of proof on research into health effects of radioactive contamination, as Professor Yablokov describes in his chapter on methodological problems, a section of the book that should be required reading for critics. In a sinister reminder of the tactics of the tobacco industry 30 years ago, the nuclear establishment requires proof of correlation between received dose and health effect, knowing full well that the received dose will never be known – unless all possible victims (all Belarusians as a strict minimum) were autopsied and each organ measured for concentration of different radionuclides.

New York Academy of Sciences Estimates Are Not, In Fact, Incompatible With Those of the Nuclear Establishment

The academic discipline of epidemiology provides statistical methods for identifying possible causative factors contributing to observed illness, with varying degrees of certainty (“significance”), which are calculated and made explicit.

The estimate of 985 000 deaths is based on epidemiological studies of the kind that are used everywhere to inform public health policy making. By holding constant factors such as socioeconomic status, demography, and geography, the health problems of populations *differing only in terms of exposure to low, medium, or high levels of contamination* are compared. Without having proved the mechanism of the cause and effect, correlations may be established and should then be investigated. Note that the WHO has failed to do this and is therefore accused of scientific negligence resulting in nonassistance to populations in need.

The estimate of 4000 deaths is made by the IAEA⁹ and refers to 200 000 liquidators, 135 000 evacuees, and 270 000 residents of the most contaminated areas (605 000 people). The same study estimates a further 5000 deaths among the 6 million people in other contaminated areas of the 3 most affected countries. Given that exposure levels in the most contaminated areas of the rest of Europe (and parts of the Middle East and Asia) are often comparable to less contaminated areas of the 3 most affected countries,¹⁰ it is not at all surprising that estimates of deaths for the whole of Europe (731 million people) and estimates of deaths worldwide are in the hundreds of thousands.

Interestingly, Alex Rosen of International Physicians for the Prevention of Nuclear War pointed out in 2006 that the International Commission on Radiological Protection’s own calculations would predict well over 100 000

cancer deaths from a meltdown such as occurred at Chernobyl. He reports that UNSCEAR subsequently corrected this risk factor and published a figure of 11 000 cancer deaths per 1 million man rem, which would bring the figure of additional cancer deaths due to Chernobyl to 264 000 – a figure that accords very well with estimates and reports from independent researchers.¹¹

The Lancet Suggests That “The Whole Truth May Not Have Been Told”

Concern about the extent to which public health is protected by current norms relating to ionizing radiation is increasing for various reasons, not least the myriad “unexplained” health problems that could not be predicted on the basis of the current model. The interested public is not convinced by the invention of new health conditions such as “radiophobia,” “dependency syndrome,” or “paralyzing fatalism” – particularly in relation to health effects in children, animals, and plants – and is quite correct in regarding such notions as pseudo-science.

And of course, the actions of the Tokyo Electric Power Company and the Japanese government in response to multiple accidents at the Fukushima power plant (under the discreet supervision of the IAEA) will have reinforced public concern about the intentions – and indeed the competence – of their nuclear authorities, whether national or international.

As for the WHO, it completed its discredit in matters of radiation and health by declaring 2 days after the accident, *on the basis of no evidence whatsoever*, that in relation to the Fukushima accident, there was no public health impact. Of course, the United Nations health agency was anticipating instructions from the IAEA on the public health message to be imparted, but it would surely have been more convincing to state that they were not yet in possession of any facts.

In June 2014, the editor of the *Lancet*, Richard Horton, having observed the presence of protesters for 7 years in front of the WHO in Geneva, decided to find out why they were there. In the Comment that he then wrote,¹² he stated that “the truth may not have been fully told” and that “WHO has a responsibility to get to that truth, however uncomfortable it might be for member states or related agencies.”

Doubts about the adequacy of radioprotection norms and the “science” upon which they are based are being expressed even from within the establishment, most recently by Dr Smeesters, a member of UNSCEAR and of Expert Group 31 of Euratom and, as he says himself, “one of the guilty people who developed the European basic safety standards.”¹³

The Nuclear Establishment Is Running Out of Dirty Tricks but Volume 1181 Is Indelible

Links to two “critical reviews” of Volume 1181 are provided on the NYAS site. The standard of these two reviews, in terms of level of analysis, fairness, and

style, is low. Balonov,¹⁴ of the IAEA, relies on insult, referring to the book as “Yablokov’s Manifesto” and on misrepresentation, eg, claiming that the author proposes “ecological or geographic technologies” whereas in fact Yablokov is describing standard epidemiological methods.

Balonov clinches his critique with the statement that “if such a mass death of people occurred, it would not have remained unnoticed, even more because it is not so much about the population of the three countries, than about the rest of Europe and even countries outside Europe.” Unfortunately, this is untrue, as the nuclear establishment often insists – as if to reassure the nuclear industry. Any increase in cancer attributable to Chernobyl will be undetectable against the background of millions of cancers attributable to other/all causes.

Two points should be made. First, “difficult to detect” does not mean “impossible to detect” as the mass of evidence in Volume 1181 suggests. Second, it is acknowledged by the International Commission on Radiological Protection and UNSCEAR that a predictable number of cancers will occur in populations exposed to a given level of radioactive contamination, as stochastic rather than deterministic effects (This is the accepted probabilistic approach in which there is no need to identify which particular individuals will develop illness, nor to attribute their illness to one particular carcinogen.).

Jargin makes the extraordinary claim that “international literature is scarcely quoted and almost not discussed,” but we quickly understand that by “international” he means the nuclear establishment. The main thrust of his critique is that “statements in Volume 1181 are in disagreement with those of the IAEA and UNSCEAR.”¹⁵ They are, indeed, as Yablokov says in his measured and reasoned reply to Jargin. “The book itself was written as a counterpart to reports of official experts that may be connected to the nuclear industry.”¹⁶

Insult and misrepresentation are blunt instruments and reflect poorly on the nuclear establishment. If these reviews are the best they can do in response to the publication of independent studies on the health effects of Chernobyl, it suggests that serious and substantive criticism is hard to find.

All of this is nothing, however, compared to the dirty tricks currently used by the French nuclear establishment. Through workshops on radioprotection for secondary school children, the Centre d’Etude sur l’Evaluation de la Protection dans le Domaine Nucléaire (Centre d’Etude sur l’Evaluation de la Protection dans le Domaine Nucléaire has 4 members representing the French nuclear establishment: Electricité de France, Institut de Radioprotection et de la Sureté Nucléaire, Commission à l’Energie Atomique et aux Energies Alternatives, and AREVA.) has arranged for Japanese school children to read PowerPoint presentations to French school children stating that “We can clearly see that Fukushima is safe” and that “We don’t have to worry about radiation in Fukushima.”¹⁷ This is an obscene manipulation of children who, furthermore, are possible future victims of the accident and its cover-up.

The health effects of Fukushima are beginning to be known,^{18,19} and huge amounts of information will become available every year and for the next couple of decades. The cover-up is over because unlike the victims in Belarus, Ukraine, and Russia, the Japanese people are able to send reports to the outside world about what is really happening – despite their government's best efforts at censorship.

Let us be clear. Volume 1181 on the health and environmental effects of Chernobyl, authored by Professors Yablokov and Nesterenko and Dr Nesterenko, was published by the NYAS because – *according to the international scientific establishment's own criteria* – it is a work of scientific value.

Volume 1181 is indelible. Japanese and French translations will be available shortly and other language versions will be prepared. The book is here to stay (It is available at independentwho.org/en/books in English.) as is the fact that it was published in the *Annals of the New York Academy of Sciences* in 2009. Establishment pseudo-science on radiation and health, on the other hand, is in its death throes and will be swept away by history.

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