Evidence Meltdown

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The green movement has misled the world about the dangers of radiation.

By George Monbiot

Over the past fortnight I've made a deeply troubling discovery. The anti-nuclear movement to which I once belonged has misled the world about the impacts of radiation on human health. The claims we have made are ungrounded in science, unsupportable when challenged and wildly wrong. We have done other people, and ourselves, a terrible disservice.

I began to see the extent of the problem after a debate last week with Helen Caldicott (1). Dr Caldicott is the world's foremost anti-nuclear campaigner. She has received 21 honorary degrees and scores of awards, and was nominated for a Nobel Peace Prize (2).

Like other greens, I was in awe of her. In the debate she made some striking statements about the dangers of radiation. So I did what anyone faced with questionable scientific claims should do: I asked for the sources. Caldicott's response has profoundly shaken me.

First she sent me nine documents: newspaper articles, press releases and an advertisement. None were scientific publications; none contained sources for the claims she had made. But one of the press releases referred to a report by the US National Academy of Sciences, which she urged me to read. I have now done so – all 423 pages(3). It supports none of the statements I questioned: in fact it strongly contradicts her claims about the health effects of radiation.

I pressed her further and she gave me a series of answers that made my heart sink – in most cases they referred to publications which either had little or no scientific standing, which did not support her claims or which contradicted them. (I have posted our correspondence(4a,4b), and my sources, on my website). I have just read her book Nuclear Power is not the Answer (5). The scarcity of references to scientific papers and the abundance of unsourced claims it contains amaze me.

But it gets worse; much worse. For the past 25 years, anti-nuclear campaigners have been racking up the figures for deaths and diseases caused by the Chernobyl disaster, and parading deformed babies like a mediaevel circus. They now claim that 985,000 people have been killed by Chernobyl, and that it will continue to slaughter people for generations to come. These claims are false.

The UN Scientific Committee on the Effects of Atomic Radiation (Unscear) is the equivalent of the Intergovernmental Panel on Climate Change. Like the IPCC, it calls on the world's leading scientists to assess thousands of papers and produce an overview. Here is what it says about the impacts of Chernobyl.

Of the workers who tried to contain the emergency at Chernobyl, 134 suffered acute radiation syndrome; 28 died soon afterwards. Nineteen others died later, but generally not from diseases associated with radiation(6). The remaining 87 have suffered other complications, included four cases of solid cancer and two of leukaemia. In the rest of the population, there have been 6,848 cases of thyroid cancer among young children, arising "almost entirely" from the Soviet Union's failure to prevent people from drinking milk contaminated with iodine 131(7). Otherwise, "there has been no persuasive evidence of any other health effect in the general population that can be attributed to radiation exposure."(8) People living in the countries affected today "need not live in fear of serious health consequences from the Chernobyl accident."(9)

Caldicott told me that Unscear's work on Chernobyl is "a total cover-up"(10). Though I have pressed her to explain, she has yet to produce a shred of evidence for this contention.

In a column last week, the Guardian's environment editor, John Vidal, angrily denounced my position on nuclear power(11). On a visit to Ukraine in 2006, he saw "deformed and genetically mutated babies in the wards … adolescents with stunted growth and dwarf torsos; foetuses without thighs or fingers". What he did not see was evidence that these were linked to the Chernobyl disaster.

Professor Gerry Thomas, who worked on the health effects of Chernobyl for Unscear, tells me that there is "absolutely no evidence" for an increase in birth defects(12). The National Academy paper which Dr Caldicott urged me to read came to similar conclusions. It found that radiation-induced mutation in sperm and eggs is such a small risk "that it has not been detected in humans, even in thoroughly studied irradiated populations such as those of Hiroshima and Nagasaki."(13)

Like John Vidal and many others, Helen Caldicott pointed me to a book which claims that 985,000 people have died as a result of the disaster(14). Translated from Russian and published by the Annals of the New York Academy of Sciences, this is the only document which looks scientific and appears to support the wild claims made by greens about Chernobyl.

A devastating review in the journal Radiation Protection Dosimetry points out that the book achieves its figure by the remarkable method of assuming that all increased deaths from a wide range of diseases – including many which have no known association with radiation – were caused by the accident(15). There is no basis for this assumption, not least because screening in many countries improved dramatically after the disaster and, since 1986, there have been massive changes in the former eastern bloc. The study makes no attempt to correlate exposure to radiation with the incidence of disease(16).

Its publication seems to have arisen from a confusion about whether the Annals was a book publisher or a scientific journal. The academy has given me this statement: "In no sense did Annals of the New York Academy of Sciences or the New York Academy of Sciences commission this work; nor by its publication do we intend to independently validate the claims made in the translation or in the original publications cited in the work. The translated volume has not been peer-reviewed by the New York Academy of Sciences, or by anyone else."(17)

Failing to provide sources, refuting data with anecdote, cherry-picking studies, scorning the scientific

consensus, invoking a cover-up to explain it: all this is horribly familiar. These are the habits of climate change deniers, against which the green movement has struggled valiantly, calling science to its aid. It is distressing to discover that when the facts don't suit them, members of this movement resort to the follies they have denounced.

We have a duty to base our judgements on the best available information. This is not just because we owe it to other people to represent the issues fairly, but also because we owe it to ourselves not to squander our lives on fairytales. A great wrong has been done by this movement. We must put it right.

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References:

1. http://www.democracynow.org/2011/3/30/prescription_for_survival_a_debate_on

2. http://www.helencaldicott.com/about.htm

3. Committee to Assess Health Risks from Exposure to Low Levels of Ionizing Radiation, National Research Council, 2006. Health Risks from Exposure to Low Levels of Ionizing Radiation: BEIR VII – Phase 2. National Academies Press. http://www.nap.edu/catalog/11340.html. The PDF costs $34.

4a. Here's the correspondence:

http://www.monbiot.com/2011/04/04/correspondence-with-helen-caldicott/
4b. And here are my responses to what she says are her sources:
http://www.monbiot.com/2011/04/04/interrogation-of-helen-caldicotts-responses/

5. Helen Caldicott, 2006. Nuclear Power Is Not the Answer. New Press, New York.

6. United Nations Scientific Committee on the Effects of Atomic Radiation, 2011. Volume II, Annex D: Health effects due to radiation from the Chernobyl accident. This is the latest section of the 2008 report Sources and Effects of Ionizing Radiation: Report to the General Assembly. See Paragraph 2, page 1 and Figure VII and paragraph 63, page 14.
http://www.unscear.org/docs/reports/2008/Advance_copy_Annex_D_Chernobyl_Report.pdf

7. Para 33, page 8 and para 4, page one. As above.

8. Para 99, page 19. As above.

9. Para 100, page 19. As above.

10. http://www.democracynow.org/2011/3/30/prescription_for_survival_a_debate_on

11. http://www.guardian.co.uk/commentisfree/2011/apr/01/fukushima-chernobyl-risks-radiation

12. Professor Gerry Thomas, Chair in Molecular Pathology, Department of Surgery & Cancer, Imperial College, London, pers comm, 1st April 2011.

13. Committee to Assess Health Risks from Exposure to Low Levels of Ionizing Radiation, page 6. As above.

14. Alexey V. Yablokov, Vassily B. Nesterenko and Alexey V. Nesterenko, 2010. Chernobyl: Consequences of the Catastrophe for People and the Environment. Annals of the New York Academy of Sciences. I have this in pdf form, sent to me by the NYAS.

15. MW Charles, 2010. Review of Chernobyl: consequences of the catastrophe for people and the environment. Radiation Protection Dosimetry (2010) 141(1): 101-104. doi: 10.1093/rpd/ncq185. http://rpd.oxfordjournals.org/content/141/1/101.full

16. The authors announce that they reject this method in the introduction to the book. Alexey V. Yablokov, Vassily B. Nesterenko and Alexey V. Nesterenko, as above, page 2.

17. Sent to me by Douglas Braaten, Director and Executive Editor, Annals of the New York Academy of Sciences, 2nd April 2011.

Why This Matters George Monbiot Posted on13th April 2011

We have to be sure our facts about nuclear power are right, as the latest exchange with Helen Caldicott shows.

By George Monbiot. Published on the Guardian's website, 13th April 2011

My request to Helen Caldicott was a simple one: I asked her to give me sources for the claims she had made about the effects of radiation. Helen had made a number of startling statements during a television debate, and I wanted to know whether or not they were correct. Scientific claims are only as good as their sources.

Here are three examples of the questions I asked and the answers she gave me.

At first I asked for general sources for her claims. She sent me nine documents: press releases, newspapers articles and an advertisement. Only one of them was linked to a scientific publication, the BEIR VII report published by the National Academy of Sciences. She urged me to read it. I did so and discovered that, far from supporting her claims, it starkly contradicts them. For example, it says:

– The risk of radiation-induced mutations in sperm and eggs, resulting in heritable disease "is sufficiently small that it has not been detected in humans, even in thoroughly studied irradiated populations such as those of Hiroshima and Nagasaki."

– Regarding transmissible genetic damage from the exposure of future parents, such as "spontaneous abortions, congenital malformations, neonatal mortality, stillbirths, and the sex ratio of offspring … there is no consistent evidence of an association of any such outcomes with exposure to environmental sources of radiation."

– "On balance, the existing evidence does not support the conclusion that rates of childhood leukemia have increased as a result of radiation exposures from the Chernobyl accident."

I began to wonder whether Helen has actually read this report, or was hoping that, at 423 pages, it would scare me away.

She claimed that "Turkish food is extremely radioactive." The source she gave me said nothing of the sort. Instead it states the following: "TURKEY. Some 45,000 tons of tea was contaminated with Chernobyl radioactivity in 1986–1987, and more than a third of the 1986 harvest could not be used." That says nothing about Turkish food, today. (Page 292).

She claimed that isotopes of krypton, xenon and argon "can mutate the genes in the eggs and sperm and cause genetic disease." When I asked her for a source, she told me, "This is also described in my book." In fact her book says (page 55): "There have never been

any epidemiological studies performed on the effects of exposure to the noble gases xenon and krypton." This flatly contradicts her own claim.

When I pressed her for better sources, her publishers wrote to me and said she did not have time to find them. Now she has had time – time enough to write an article for the Guardian attacking me – but still hasn't supported the claims I questioned.

Instead, she compounds the damage. First she invents a quote, which she attributes to me. She says, "It is inaccurate and misleading to use the term "acceptable levels of external radiation"... as Monbiot has done." I have never used this term, and never would.

Then she appears to suggest that iodine-131 can "continuously irradiate small volumes of cells ... over many years". As it has a half life of 8 days, this seems unlikely. Again, a source would help to clear the matter up.

Then she makes a remarkable allegation. As a result of a conspiracy hatched with the International Atomic Energy Agency, since 1959 the World Health Organisation has "made no more statements on health and radioactivity." This is completely false, as even the quickest search would have shown her.

For example, the WHO currently runs an Ionizing Radiation Programme and a Radiation and Environmental Health Programme, both of which assess the impacts of radiation on health. It has set up an International Research Advisory Committee "to identify gaps and under-discovered areas on health effects from low-dose exposures to ionizing radiation". In 2006 it published a 167-page report titled Health Effects of the Chernobyl Accident.

As for the alleged conspiracy, this is a story that has been circulating among anti-nuclear campaigners for many years, becoming ever more lurid. It is, as far as I can tell, baseless. It arises from a wild inflation of what looks like a standard information-sharing agreement between two UN agencies. This is what happens when we fail to be as sceptical about the ideas we like as we are about the ideas we don't.

Incidentally, Helen has still not provided a shred of evidence for her claim that the recent report by another UN agency – the UN Scientific Committee on the Effects of Atomic Radiation – into the Chernobyl disaster is "a total cover-up". Twice I have asked her to substantiate this allegation; twice she has replied with accusations about the WHO. Is she aware that these are different agencies?

But perhaps most alarming is her continued reliance on the report by Alexey Yablokov, Vassily Nesterenko and Alexey Nesterenko, which claims that 980,000 people died as a result of Chernobyl. As its critics have pointed out, this figure cannot possibly be correct, as it arises from the extraordinary assumption that all increased deaths since 1986 from a host of diseases – including many which have no known connection with radiation – were caused by Chernobyl. The report has not been peer-reviewed and the academy which published it has distanced itself from it.

Continuing to use such a severely flawed document for your central claims about the health impacts of radiation hardly inspires confidence.

All this, while the disaster at Fukushima continues to unfold, might sound pedantic. But I think these points are worth making, for several reasons. I believe that journalists should not stand by while misinformation is spread. If there is any value in journalism, it lies in trying to winnow fact from fiction, and helping people to form a more accurate view of the world.

If, on the basis of falsehoods and exaggerations, we make the wrong decisions, the consequences can be momentous. Two immediate issues leap to mind. The first is that countries shut down their nuclear power plants or stop the construction of new ones, and switch instead to fossil fuels. Almost all of us would prefer them to switch to renewables, but it seems that this is less likely to happen.

In response to the Fukushima disaster, for example, the German government insists that it will replace its nuclear plants with new renewable power sources – particularly large wind farms. But as most of its wind is in the north and much of its nuclear capacity is in the south, this will require a massive new construction of power lines. That gives the government just as much of a political headache as the current anti-nuclear protests. The new lines are also likely to take around 12 years to build, raising the possibility of shortages.

My fear is that the German programme will run into difficulties as a result of public objections to new wind farms, power lines and pumped storage plants. The government will discover that there's a less contentious way to solve its problems: importing even more electricity from the Czech Republic. This carries low political costs but high environmental costs. Over 60% of Czech power is produced by burning coal. Not any old coal, but, for the most part, the dirtiest and most polluting of all forms: lignite and brown coal.

As Mark Lynas has shown, phasing out planned nuclear programmes in a number of countries as a result of the Fukushima disaster could tip the balance between two and three degrees of global warming.

We know that nuclear power, as it has done at Fukushima, can make large areas uninhabitable, for some years at least. We know that the decommissioning and waste disposal costs are huge. Both problems are horrible: the first particularly so. But both are very much smaller than the likely impacts of climate change, which could force the evacuation of regions many times larger, and which leaves us with a decommissioning problem – the levels of carbon dioxide in the atmosphere – which looks insoluble. We must not replace a bad technology (atomic energy) with a far worse one.

In deciding whether or not to retain nuclear power, we are not talking about some distant possible future in which human population, human desires and economic activity have all greatly declined, desirable as that might be. We're talking about choices being made right now, starting from where we are, within the current economic model;

choices which could, if the wrong decisions are made, have devastating consequences for future generations. If these decisions are guided by misinformation and exaggerations, those responsible for spreading false stories have a heavy moral burden to carry.

There's a second sense in which this is a moral challenge, not just an intellectual one. We know that the consequences of underplaying the dangers of radiation could be hideous, and I fervently hope that this has not happened, and that the doses received so far by workers at Fukushima carry the low likelihood of causing cancer that scientists anticipate. We hear much less about the consequences of overplaying them.

What if, for example, the continuing dangers of radioactive pollution for the people in the nations around Chernobyl have been so greatly exaggerated that they have been exposed to 25 years of unnecessary terror and distress? What if this has caused serious and widespread psychological problems, as the UN Scientific Committee suggests(Page 513)? What if we have exploited vulnerable people – those born with deformities and genetic diseases – by parading their conditions as examples of the damage radiation has done, when the evidence suggests that they are not? What if the same burdens are inflicted on the people of Japan?

If that has happened, is it not a terrible thing to bear? Don't we have a duty to interrogate ourselves as scrupulously as we can to ensure that we have not and will not do such a thing? All of us who are concerned about such issues – Helen and I included – want to prevent unnecessary suffering. If we spread misinformation, we could inadvertently achieve the opposite.

This is an especially difficult time to try to make the case for keeping the dangers of nuclear power in perspective. The frightening events at Fukushima are still unfolding, the disaster has been upgraded to category 7, making it one of the two worst such events on record. But it is just when the case is hardest that it most urgently needs to be made, however much anger this generates. If we don't stick to the facts, if we don't subject all claims to the same degree of scepticism, we could make a bad situation worse.

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