

*(From the proceedings of Challenges to Nuclear Waste Management: An International Conference on Emerging Public Issues, held at the University of Winnipeg, Manitoba, Canada, September 12-14 1986. This conference, the first of its kind in Canada, was convened with the purpose of examining the topic of radioactive waste from a variety of perspectives, and of facilitating and promoting information-sharing and discussion. The 1986 conference was the only occasion on which I have spoken professionally in my home town. The proceedings included the following biographical note.)*

### **Walter C. Patterson**

*Walter Patterson is a native Winnipegger, and completed his Master's degree in nuclear physics at the University of Manitoba in 1960. Since then he has lived in England, teaching and writing, and giving expert testimony before several Parliamentary Committees on nuclear power. From 1972 to 1978, he was full-time energy specialist for Friends of the Earth UK. Walt has been a prolific author on various aspects of nuclear technology. His books include **Nuclear Power** (Penguin Books, 1976) and **The Plutonium Business and The Spread of the Bomb** (Sierra Club Books, 1985; Paladin 1984). He has also written numerous articles and reports for both government and non-governmental agencies throughout the world and appears regularly in both print and electronic media.*

The last time I was in Winnipeg was about a year ago, when I was acting as an advisor to a committee of the British Parliament, the Select Committee on Environment. They were involved in a year-long study of radioactive waste around the world, concentrating on industrial countries. While we were in Canada we were shown around by Atomic Energy of Canada Limited, and we all went down the hole at Lac du Bonnet. We were treated very kindly by AECL; they gave us long presentations. After we had parted company with AECL, the committee members, the British MPs, surrounded me and asked me, as their advisor, what was that all about? And for the one time in our entire trip, I had to say I had not the faintest idea. I do not know why they are doing what they are doing: because if this is supposed to be research for an underground repository for final disposal of spent fuel, everybody in the business knows that the one thing you have to avoid is water - and the place is soaking! Absolutely soaking! Up to here in water! And if it is not intended as a repository, I do not know why they are carrying out research there at all, because the other thing that everybody will tell you, as they told us, is that it is crucially important for your data to be site-specific. It will be no use, unless it applies to the place where you are actually intending to put the repository. I was reminded, while we are talking about this, of the story about the policeman who finds a drunk on his hands and knees under a streetlight at 3am. He says, "What's the matter, buddy?" And the drunk says, "I lost my keys," and the officer says, "Where did you lose them?" And the drunk says, "Over there in front of my house." So the officer asks, "Why are you looking here then?" And the drunk says, "You see, officer, the light is better here!" AECL seems to think the light is much better at Lac du Bonnet, but I don't understand their thinking. I have been saying for some time that anybody who is intending to put a final repository

somewhere, and is carrying out a research programme for such a final repository, must start by spelling out exactly what it is he's looking at: what the parameters are, what the particular scientific concepts are that are being investigated and measured; and he should say *beforehand* what he considers to be acceptable values of these parameters. Otherwise, you are looking at every kind of geology, everywhere in the world, which is what the industry is now doing. There remains in the public mind the suspicion that whatever they find will satisfy them. They will be in the position of firing their arrow at a board fence, then painting the bullseye around wherever it hits. This is not the scientific method.

The nuclear industry has never admitted that any kind of geology won't work. They've always assumed that anything they look at is potentially useful. Until they get to such and such a point where they tell us that such and such a geology is unacceptable, the suspicion is going to remain in a lot of minds that they'll accept anything that is politically feasible, whether or not it is scientifically acceptable.

I should add that I am not myself a believer in the conspiracy theory of history. I subscribe to the cock-up theory of history. And I don't think it is in AECL's mind a conspiracy. I think AECL simply shares a feeling that is found in nuclear establishments the world over, and that is that it believes that anything it wants to do, it *can do*. And I think that's where they got the name for the reactors.

The problem of course, is that radioactive waste does exist, but it is only one of many problems facing the world nuclear industry, and it may not even be their top priority. I prepared a paper for a British academic journal called *Energy Policy*; the paper was invited last December and finished in February, and in May I got a frenzied telephone call from the editor because it was due to appear in the June issue, saying what can we do about this article? Because it was an overview of the status of nuclear power, 30 years after it began, and of course, it had been written before the Soviets blew up Chernobyl 4. I said, all you can do is say that it was written before they blew up the reactor, because, in fact, even before they blew up the reactor, the problems were already so numerous and so daunting that Chernobyl 4 was just a sort of radioactive icing on the cake.

The fundamental problem I have always had with nuclear technology is its "opportunity cost" - the fact that we seem to be so obsessed with putting money and skill and time into nuclear activities that we have let so many non-nuclear opportunities go by the board. That is still a fundamental problem to me. That is the bottom line - it's a dumb thing to be doing, when there are so many better things to be doing. Over and above that, I'm afraid that the additional problems that I've had are not so much with the hardware as - broadly speaking - with the people who wind up in charge of nuclear technology, who seem to be so very curiously obsessed with their activity, and so suspicious about anybody who raises any doubt whatever about the feasibility or desirability of what they are doing. I was reminded, as I headed for Winnipeg, that back when the first edition of a book of mine called *Nuclear Power* came out in 1976, I received in an anonymous brown paper parcel a copy of a 54-page critique of the book prepared by the public relations people at Atomic Energy of Canada Limited, which had in the first paragraph a quite delightful sentence: "This book is especially dangerous because there are very few mistakes in it."

My own preoccupation on the nuclear front for some years now has been the relationship between radioactive waste management and nuclear weapons proliferation, which is one of the reasons why I got invited to act as one of the two advisors to the Select Committee a year ago. In Britain, the nuclear waste issue has been for some time one of the most heated and controversial in many different aspects, starting with the British policy of reprocessing the spent fuel, which greatly aggravates the management of the material that results. It increases the volume more than a hundred-fold; it releases a lot of radioactivity directly into the environment; and then, of course, it mobilizes separated plutonium which then becomes available for bombs. Let me just say that the Select Committee finally reported in March of this year, and I strongly recommend that you get your local library at least to obtain a copy of the report, which is called simply *Radioactive Waste*. It is the single most comprehensive compendium of the state of the art that I am aware of. And when you consider that this is a committee almost entirely of Conservative MPs from Mrs Thatcher's own party, and that they came out saying almost in so many words that British waste management policy is in chaos, you'll understand what a controversy that report aroused. The government, of course, dismissed virtually all its findings out of hand, after an embarrassed silence. The difficulty that the government has is that the evidence is on the record and it cannot readily be waved aside.

However, that said, my preoccupation with nuclear waste and nuclear weapons proliferation was drastically interrupted on 28 April when the word reached us that Chernobyl had blown up. Until that time, for a number of years, I had hardly given any thought to nuclear safety, of nuclear power stations and facilities, compared to other issues like nuclear economics. But since 28 April my feet have hardly touched the ground, because I have been travelling all over the world; and I can assure you that the concern about nuclear power issues of all kinds is at a higher level than it has ever been and is better informed than it has ever been in my experience. And it is world-wide.

The Vienna conference on the after-effects of Chernobyl was an extraordinary experience. It took Western participants totally by surprise. I'm sure you will have read that the Soviets provided more detail and more circumstantial evidence about their accident than we have ever had from a Western nuclear accident, in spite of the seriousness of the Soviet accident. The Soviets were astonishingly forthcoming. The first reaction of the Western industry was simply to dismiss the Soviet accident out of hand, saying that it was just some sort of bizarre design of reactor, and in any case, you know - "You can't trust the Commies." But it turns out that Chernobyl 4 was one of the most recent plants built in the Soviet Union and had one of the most outstanding operating records.

The curious outcome of the conference was that the nuclear community went away from Vienna convinced on the basis of the Chernobyl accident that nuclear power was safe. I leave it up to you to ask how they came to this conclusion. But that was undoubtedly the frame of mind in which they left.

One of the key developments was a fascinating new approach to radiation pathology.

They decided that it would be, of course, extremely difficult to identify the long-term health effects of the accident; but they said, even on the basis of the Soviet numbers - 24,000 fatal cancers, as a direct result of the accident, plus many more non-fatal cancers - nevertheless those 24,000 cancers would take place in a population of many millions of people over a period of 70 years, and compared to all the other ways that people were going to die in that population, it really wasn't that important. In any case, everybody dies once, and if Chernobyl doesn't get you, something else will, so why worry about a nuclear accident? Now I find this quite a fascinating approach to radiation pathology. I expect you're going to see a lot more of it in the future, especially in the context of radioactive waste management. It betrays an ethical poverty which is deeply worrying. The other conclusion was that the reason why Chernobyl 4 was blown up by its operators was that they were convinced that the plant was completely safe. That to me is an instance of the kind of dangerous complacency in the nuclear context which we are surrounded with in almost every aspect, including the nuclear waste management aspect. Therefore I would say that, as we are being encouraged this weekend to think globally, we should take it one step further and also think "Chernobyl-ly."

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