

Nuclear Power Kills! The Real Reason the NRC Cancelled Its Nuclear Site Cancer Study

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The US's Nuclear Regulatory Commission just cancelled its study into cancer near nuclear plants citing the 'excessive cost' of \$8 million, writes Chris Busby. Of course that's rubbish – similar studies in the UK have been carried out for as little as £600 per site, and in any case \$8 million is small change for the NRC. The real reason is to suppress the unavoidable conclusion: nuclear power kills.

Despite the truly enormous amount of information that has emerged about the adverse health effects of releases of radioactivity since 1990, no official investigation will be carried out. The nuclear industry is now in a corner.

After spending some \$1.5 million and more than five years on developing strategies to answer the question of increases of cancer near nuclear facilities, the US Nuclear Regulatory Commission (NRC) last week reported that they would not continue with the process. They would knock it on the head [1].

This poisoned chalice has been passed between the US National Academy of Sciences (NAS) and the NRC since 2009 when public and political pressure was brought to bear on the USNRC to update a 1990 study of the issue, a study which was widely seen by the public to be a whitewash.

The NRC quickly passed the unwelcome task up to the NAS. It requested that the NAS provide an assessment of cancer risks in populations living 'near' the NRC-licensed nuclear facilities that utilize and process Uranium. This included 104 operating nuclear reactors in 31 States and 13 fuel cycle facilities in operation in 10 States.

The NRC request was to be carried out by NAS in two phases. Phase 1 was a scoping study to inform design of the study to be begun in Phase 2 and to recommend the best organisation to carry out the work.

The Phase 1 report was finished in May 2012. The best 'state of the art' methods were listed and the job of carrying out the actual study, a pilot study, was sent to: Guess who? The NRC. The poisoned chalice was back home. The NRC was now in a corner: what could they do?

If you don't like the truth ... suppress it

The committee sat for three years thinking about this during which time more and more evidence emerged that if it actually carried out the pilot study, it would find something bad. It had to escape. It did. It cancelled it. The reason given was that it would cost \$8 million just to do the pilot study of cancer near the seven sites NAS had selected in its 600 page Phase

1 report. [2]

So despite the truly enormous amount of information that has emerged about the adverse health effects of releases of radioactivity since 1990, no official investigation will be carried out. The nuclear industry is now in a corner.

Its only way forward is to continue with what is now clearly definable as a psychosis: a failure to compare belief with reality. It has to stick its fingers in its ears put on the blindfold and soldier on.

But this recent move of the NRC was unexpected. The closure of the study is hard for it to explain to Congress, the Senate and the public. Because even if it does cost \$8 million, what is that compared with saving the lives of the thousands - or millions, if we take the whole radiation risk model?

On the European Child Health Committee PINCHE [3] there was a French statistician who told me that the sum they put on a single child leukemia was \$1.7M. I bet you didn't know they have costed it. NRCs best option (and I suspect their original plan) would have been to carry out some more dodgy epidemiology, like the 1990 study.

There are many ways to lose your statistical significance

It is not difficult to carry out an epidemiological study of cancer near any point source of radioactive contamination. But it is fairly easy to design the study in such a way that you find no effect.

They could have asked the UK's COMARE [4] and their friends the leukemia cluster busters SAHSU [5] at Imperial College London, or better the Wales Cancer Intelligence Unit [6] in Cardiff.

When the NAS began their Phase 1 discussion on best methodology, what they called 'State of the Art', we followed developments with some interest. Indeed, in a bogus request for inputs NAS invited comments and suggestions. This is the modern democratic fig-leaf for all these decision-making processes where the outcome has already been decided.

We sent in our suggestions (which have been published recently [7]) and others did also, for example Ernest Sternglass's outfit, the Radiation and Public Health Project RPH in New York, which had published several studies of cancer near US nuclear sites [8] and a book by Dr Jay Gould, *The Enemy Within*. None of the suggestions were acknowledged by the NAS or incorporated in any way.

What you need is the sex and age breakdown of the populations living close to the site (less than 10km) or near where the releases from the site end up (e.g. downwinders as in Trawsfynydd, or those near contaminated coasts as in Hinkley Point and Bradwell).

What NAS proposed you needed (like COMARE) was population data of those living inside 50 km from the nuclear source. 50 kilometres? How much radioactivity is going to travel 50 kilometres? The German KiKK study of child leukemia [9] found the effects inside 5km (about 3 miles). We found our breast cancer effects within 5 miles of the contamination. A 50km study would dilute any effect out of existence.

Of course also it is good to have some data about where the contamination goes. So you

would look at downwind populations or those near where the liquid releases end up. But 'State of the Art' for the NAS was the usual absurdity of drawing circles around the point source.

This also dilutes any contaminated sector with those unexposed living in the (larger) uncontaminated sector. What NAS majored on was the need to quantify releases and calculate the doses from that data. The reason was obvious. They wanted to say that the doses were so small (below background) that they would not find anything.

All proceeding to plan, but then a nasty snag

Indeed, in the final 2012 Phase 1 report, the NAS committee stated exactly that. One of their main findings was low expected statistical power:

Doses resulting from monitored and reported radioactive effluent releases from nuclear facilities are expected to be low. As a consequence, epidemiologic studies of cancer risk in populations near nuclear facilities may not have adequate statistical power to detect the presumed small increases in cancer risks arising from these monitored and reported releases.

That is: we won't be able to find anything because we already know that we can't find anything. They include their expected result in the initial protocols.

And just to underline this, they present the first of their three preferred study designs. Risk-projection models, they write,

estimate cancer risks by combining population radiation dose and/or dose surrogate (e.g., distance and direction from a nuclear facility) estimates with risk coefficients derived from epidemiologic studies of other exposed populations, for example, Japanese atomic bombing survivors. Risk-projection models can be used to estimate population-based cancer risks for any facility type, population size, and time period.

But since the doses from the Japanese study necessary to give a 50% increase in cancer risk are more than 1000mSv, and the doses calculated by the current risk model for releases from nuclear sites are less than 0.1mSv, the increase in cancer expected from the Japanese based ICRP model would not be measurable.

The NAS could not reasonably exclude the one epidemiological method which would have turned up a result. Thus ecologic studies

estimate cancer risks by comparing observed cancer incidence and/or mortality rates in populations, considered as a group rather than as individuals, as a function of average radiation doses and/or dose surrogates for those populations.

That is the obvious one, the one we use. It is to choose a group close to the plant and see if the cancer rates are high. Rather than predicting that they cannot be detected. And this is the reason they could not continue: because they would have found significant effect.

How much should it cost?

The NRC state it will cost \$8 million to study the seven NAS proposed pilot sites. These are the six nuclear power stations at Dresden, Millstone, Oyster Creek, Haddam Neck, Big Rock Point, San Onofre and the nuclear fuel site at Erwin Tennessee.

This is a pilot study: that means it is looking to see if there is a problem, if there is a high rate of cancer near the plants, and that reliance upon the Japanese A-Bomb comparison is unsafe.

So all they really need is the predicted or measured places where the accumulated radioactive contamination has ended up (e.g. downwind and close to the site or the local coast) and cancer and demographic data for the people who live there; then either a nearby control group or a State average rate for comparison, perhaps both.

We carried out the Bradwell study for £600 [10]. Essex Health authority commissioned the Small Area Health Statistics Unit SAHSU (the government's leukemia cluster busters) and paid for £35,000 to check our results. Take the Millstone site in Connecticut, a power station I am familiar with and have visited in connection with a court case [11].

Millstone is a dirty power station: its radioactive discharges end up in tidal Long Island Sound and the estuary of the Thames River. The tidal range in this area is 1.5m so there is plenty of mud uncovered at low water, like Bradwell and Hinkley Point.

I looked at breast cancer in Connecticut. Guess what? The coastal Long Island Sound Counties have the high rates of breast cancer [12]. This is at county level its true but it is a pointer to what they would find. And probably they have already checked this out. They know what they will find.

But who are these people? The usual suspects

When the NRC were selecting the committees, I suggested myself. I had a track record of examining cancer rates near nuclear sites in the UK (I wrote).

Surprisingly, they didn't take up my offer, but peopled the committee with mathematical physicists and individuals with no knowledge of epidemiology and no history of studying those exposed to radioactive contamination.

Many of the people on the committee were connected with the nuclear industry, or depended on the nuclear industry for their funding. Of course, 90% of the funding of the NRC itself is from the nuclear industry and its allies but surely we expect better from the National Academy?

On the NAS website the members of the Nuclear and Radiation Studies Board NRSB are listed. Normally there is linked a biography page. When you look for the NRSB biography page you get *Missing Content: bios page is not available for board: nrsb* [13]

Here is why. There is one epidemiologist Martha Linet, but she is a member of the International Commission on Radiological Protection (ICRP) Epidemiology committee and also the NCRP full committee. Seven board members are mathematical statisticians and physicists, two are waste management engineers, there is a woman professor of cancer care, and two mineralogists.

Four work directly for the nuclear industry. One of the mathematical physicists is Fred Mettler Jr, also on the ICRP and the International Atomic Energy Agency IAEA. He also makes a living as an expert witness in radiation cases as I know having been up against him in New Orleans. No conflict of interest there then.

The only good guy on this committee is David Brenner of Columbia, an Englishman from Liverpool, but again a physicist and radiobiologist.

The plain fact is that this is an issue in epidemiology. The committee should have comprised medical and environmental epidemiologists. What possible need is there for mathematical physicists and engineers?

The UK's Hinkley Point nuclear complex kills babies

Let's bring this back home to get some perspective. Let's be clear about what is going on.

This NRC decision is a continuation of the cover up of the effects of low dose internal radiation exposure, the biggest public health scandal in human history where millions have been sacrificed on the altar of the Uranium economy and nuclear weapons.

In the last few months I have started to put all my 20 years of research into the peer-review literature. I have reported the increased levels of breast cancer deaths near Bradwell and Trawsfynydd.

Last week we published the Hinkley Point study [14] where we shifted our focus from cancer to infant deaths and stillbirths, also indicators of genetic damage, and showed that the nuclear plant releases kill children as well as adults. Naturally we also found excess adult cancer there, and Bowie and Ewings previously (1988) reported the usual local excess childhood leukemia.

Our Hinkley Point study was a forensic investigation of causation. We began by looking at a large area of Somerset, some 115 wards between 1993 and 2005 and compared those near the sea or the muddy estuary of the tidal River Parratt (cf. Bradwell) with inland wards.

We carried out some fancy statistical regressions of distance from the contaminated Steart Flats (the historic repository of the releases from Hinkley Point) and infant and perinatal mortality over the period. It is well accepted that infant mortality is caused by deprivation so we included the ward index of deprivation in the regression.

Astonishingly the results showed that it was not deprivation that killed infants in Somerset. It was Hinkley Point. Deprivation was not statistically significant, not in Somerset. When we slowly statistically crept up on the cause of the infant deaths it turned out to partly relate to an accidental release of radioactivity in 1996 for which the plant was fined £20,000 by the regulators.

The downwind town of Burnham-on-Sea, located adjacent to the contaminated mud flats, and which had the breast cancer cluster also naturally had the highest levels of infant mortality.

In Burnham North there was a significant 70% excess mortality risk for breast cancer between 1997-2005 $RR = 1.7$ $p = 0.001$ (41 deaths observed and 24 expected). Between 1993 and 1998 excess risk for infant mortality in the town was 330% ($RR = 4.3$; $p = 0.01$)

and for neonatal mortality RR = 6.7; p = 0.003 based on 4 deaths.

Sex-ratio at birth (an indicator of genetic damage) was anomalous in Burnham-on-Sea over the whole study period with 1175 (boys to 1000 girls) expected rate 1055.

The same cover up in the UK

I like to think that I had something to do with the NRC cancellation, which has come just after this, our third nuclear site cancer paper, hit the streets. The NRC and the NAS have their equivalent cover-up artists in the UK.

The Committee Examining Radiation Risks from Internal Emitters COMARE, the National Radiological Protection Board NRPB, SAHSU, the Royal Society. Much the same thing happened to the original version of the Bradwell breast cancer study, part of the Committee Examining Radiation Risks from Internal Emitters CERRIE in 2001-2004.

There was a joint epidemiological study. Three groups looked at the wards near Bradwell to see who was correct about the breast cancers. Busby, Wakeford (for the nuclear industry) and Muirhead of NRPB (also for the nuclear industry). But in the several meetings of the 'CERRIE Epidemiological Sub Committee' it emerged that there was indeed a statistically significant effect.

At this point the Minister Michael Meacher was sacked and replaced by Tony Blair (war criminal) [15] with Elliot Morley MP (later an actual jailed criminal [16] and like the NRC/ NAS circus, the Bradwell / CERRIE study was shut down.

For me, dishonest scientists in this area, responsible for supporting an industry which they know is killing people - like some of those on the NAS and NRC boards - should also be prosecuted in a court of scientific fraud [17].

I have a little list.

Chris Busby is an expert on the health effects of ionizing radiation. He qualified in Chemical Physics at the Universities of London and Kent, and worked on the molecular physical chemistry of living cells for the Wellcome Foundation. Professor Busby is the Scientific Secretary of the European Committee on Radiation Risk based in Brussels and has edited many of its publications since its founding in 1998. He has held a number of honorary University positions, including Visiting Professor in the Faculty of Health of the University of Ulster. Busby currently lives in Riga, Latvia. See also: chrisbusbyexposed.org, greenaudit.org and llrc.org.

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