



Chris Busby
Photographed in New Orleans Louisiana 2010

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Introduction and purpose: What is Truth?

This is Pilate's rhetorical question. Increasingly in the area of Science, the answer no longer depends on data, or experimental results, despite the fact that Science's advantage is exactly that: being based on empirical data, on observation. But no more. Scientific truth is increasingly an area like religion, increasingly influenced by media and by the internet and whoever controls the money. This is why Chris Busby set up Green Audit in 1992, to deconstruct the lies [1].

Busby writes

Wikipedia is a machine that is built from its inputs. But these can be from anyone who is moved to contribute to an entry or who is paid to do so. It is worse. Individuals can contribute anonymously [\[2\]](#). In an area like the public health risk of exposure to ionising radiation, there are enormously powerful interests involved. Accordingly, they can afford to pay people to attempt to destroy the credibility of anyone (e.g. me) who is revealing evidence that the current radiation risk model is dangerously unsafe, and has resulted in the deaths of millions. The internet has become a powerful tool for revealing the truth. And because of this, those whose interests are to cover up the truth absolutely have to invest in whole divisions of operators whose paid job it is to destroy the credibility and support of anyone they deem dangerous for their schemes. In my case there are two outfits involved: the military and the nuclear industry. Also involved are the agencies responsible for protecting the public and workers from exposure to ionising radiation, since proof that the system they have administered is unsafe will result in legal and psychological problems for them.

The purpose of this site, “chrisbusbyexposed” is to try and deal with the attacks on my credibility which have to some extent succeeded in their project. Over the last few years I have been kicked out of Universities, kicked off court cases, denied by the pusillanimous vote-seeking England and Wales Green Party, lost my pathetic funding sources, and had peer- review journals refuse to even consider scientific papers I have sent them. They (the journals, the University) have been written to, they have been threatened by (in one response I had from an editor) powerful people. My colleague at one University (the Karolinska Institute Stockholm) lost all his funding and even his laboratory once he began to work with me on radiation and health. My computer has been hacked into, as have computers belonging to my co-researchers, and in one case a paper I was preparing to send to a journal (on Fallujah) was discussed with the journal editor by one of the attackers even before it had been sent to the journal. No one dares to carry out the critical experiments to investigate my theoretical predictions regarding Uranium. I have approached several Universities and researchers. My own connection with the University of Ulster was to have involved these experiments; the University refused to allow them to be carried out. “Uranium is too dangerous” was the explanation. What??

First, you should note that these attacks rarely ever deal with the evidence I bring forward. What they do is attack me as a person, laugh at me, distort what I have said, make up untruths, produce and publish entertaining but dismissive photomontages of me and my colleagues and friends, as Easy Rider [\[3\]](#). Haha. My current Wikipedia entry is a battleground. Those that support me make entries, those that attack me make others; it goes back and forth. Mostly the bad guys (who are paid) win. But what is missing is information. So what I decided to do was to provide a real Wikipedia entry. I decided to condense what I have done in the last 20 years and put down an abridged account of my life, just as if it were a Wikipedia entry. I will add relevant references as I go. The idea is to help those who want to sort out my Wikipedia entry to do so. I have never had the time to fight with all the anonymous contributors paid by the military and the nuclear industry. It would be a full time occupation and I would rather carry on with my research. The

baseline is that you can ignore Wikipedia and come here to see most of what I am and what I have done.

Much is made on the internet about the fact that I don't publish much in the peer review literature. Some have said I have no publications in the peer review literature. You can check my publications in my CV. But there is some truth in the allegation. The reasons are as follows:

1. To get a paper published it has to be approved by reviewers. If it draws attention to something politically embarrassing, like the fact that the radiation risk model is wrong, it does not get past the reviewers. Therefore it does not become part of scientific belief. This results in an entirely incorrect scientific belief being crystallized for a very long time.
2. Most of the journals dealing with radiation effects are run by individuals with research of funding connections with the organisations which do not want to hear bad news about the health effects of radiation.
3. No one reads the peer-review literature except a few researchers. If you want to take your results somewhere where they will have an impact, you have to take them to the media, to the public, to the people who are, in the last analysis, affected.

Therefore, rather than trying to fight to get papers published, I have gone round the system. Similarly, rather than trying to get my books published by conventional publishers (e.g. Cambridge University Press) I obtained funding from Quaker Charities to publish them myself through Green Audit. This is not "vanity publishing"; it is the only course open to get the critical information about the destruction of the human genome out. None of my books would be considered by a real publisher as they would all be scared stiff of being sued into the ground because of the accusations I have made and the individuals and organisations I have named. However, no-one has sued me, for the very good reason that they would lose, because my accusations can be proven. For the same reason I helped to start the European Committee on Radiation Risk (see below). For all authorities are bootstrap authorities. They invent themselves and then refer to themselves. The International Commission on Radiological Protection is a bootstrap operation. Its personnel rarely have any research publications. Same with IAEA, with UNSCEAR. So instead of trying to argue with them, we go round them. Eventually it becomes clear that the data support our (ECRR) model and do not support theirs. Data here being dead people, dead children.

If you want to know who it is that is out to get me (besides George Monbiot, Matthias Lanze, Richard Wakeford and Roger Helbig) or at least one individual who is running the show, then here is a story. Back in 2011 after I visited Fukushima and started to talk about measuring radioactivity in the children, with James Ryan (the pill guy, all the fuss, see below), I was contacted by a woman from the USA who I will call Ellen May (you will see why I don't give her name soon enough). She told me that she had worked for the nuclear industry in the USA at a high level and wanted to help me and the children of Fukushima. She said that she was supported in this by a radiation department in a US

University and that they could measure levels of radionuclides in the urine of the children I was dealing with. They would do this for free. Actually there were no children then, but she didn't know this and I didn't tell her. They wanted urgently the names and addresses of all the children who had given me samples and she asked me to provide the samples. I strung her along to see where this would go. There were lots of emails and messages from her but as time went on, as I was not forthcoming, they petered out. Then one day she phoned me. She said she was in danger and so was I. She told me that one Barclay Jones had a department aimed at destroying my credibility. Barclay Jones was a Professor at the University of Illinois, she said. I had never heard of him. But Illinois is also the centre of operations of another outfit I had been attacked by: "radsafe". Many of those attacking me on the internet (e.g. Roger Helbig) were members of "radsafe" and for a while I have engaged with them by joining "radsafe" but eventually they became pissed off with the fact that I always won the arguments and they threw me out.

I heard no more from Ellen May until I was told by a friend in the USA that shortly after her call to me, Ellen May had been attacked and seriously injured, or maybe almost murdered: anyway in hospital and unlikely to recover.

Oh, around this time I received a number of emails, always from people with hotmail or yahoo type anonymous accounts telling me about some scary high level of radiation from Fukushima and inviting my comment. One was about an enormous radiation measurement on a Geiger counter in Korea, complete with video. Another showed pictures of a woman with blistered skin in Illinois who had gone out the rain. The Geiger counter there was supposed to be showing high readings. The photos were clearly of a poison ivy rash. The idea of course was to get me to come out and claim that there were high radiation levels far from Fukushima and then I could be subsequently laughed at.

More recently, I was contacted by a Dutch guy, Frank who told me that I was the most attacked person on the internet, and so must be shaking the right trees. He said he would like to help. He did help and put up a whole article about this [\[0\]](#). In the article he named Barclay Jones. Whether it was a coincidence or not, the main website attacking me, "junksciencewatch; chrisbusbyexposed", instantly disappeared. Prof Jones must have decided it was getting too hot for him and his operation. He had been identified.

So there you are. And here below is my own version of the Wikipedia entry. If you have the time, please add bits of it to the real Wikipedia. That would make a very big difference to the world.

Finally I will say one thing. The reason why I have moved in the last few years to video presentations rather than (or as well as) writing wordy reports is the following. Human beings are rather good at spotting fakes. In my videos you can see me and my friends and decide. Note that you never see those who say that radiation is OK, or if you do, you can easily see that they are very strange people. Check out the presentation at Oxford by Wade Allison. Look at those guys at the European Parliament sitting on the platform with me, especially the enormous fat guy who storms out half way through. What do you

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think of Prof Ian Fells in the BBC interview about Fukushima? This is also the reason why George Monbiot will not debate this issue with me on a public platform.

Also I don't want to sound too alarmist, but if I should disappear or die under odd circumstances, don't be too surprised. I have won enough court cases against the military and the nukes for them to know that the science is now clear, and I am the wielder of enough of that science for them to have to remove me from the scene. I know too much. So far this has been a bloodless campaign, but I have never had any illusions about where this could end. The stakes for them are very high. The stakes for the human race are also very high.

Off we go:

Christopher Busby, born 1 September 1945 is a British scientist known for his work on the negative health effects of [ionising radiation](#) exposure from internal radionuclides, particularly fission-products from nuclear fuel cycle releases, atmospheric bomb tests and accidents like Chernobyl and Fukushima. He also believes that inhaled Uranium nanoparticles from weapons usage (e.g. in Iraq and the Balkans) represent a serious genotoxic hazard (cancer, birth defects) which cannot be explained though the current radiation risk model, that of the International Commission on Radiological Protection (ICRP) [\[4-10\]](#). Busby is a director of Green Audit Limited, a private company he started in 1992 [\[11\]](#) and scientific advisor to the Low Level Radiation Campaign (LLRC) another private company that Busby helped set up in 1999 [\[12\]](#). Busby was visiting professor at the [University of Ulster](#) [\[13\]](#) but retired when the department closed in 2012. Busby was the National Speaker on Science and Technology for the [Green Party of England and Wales](#) [\[14-15\]](#) . He is no longer a member of the Green Party of England and Wales which he believes is dysfunctional, but he does support it and is supported by individual members and local parties [\[16\]](#).

Busby is Scientific Secretary of the European Committee on Radiation Risk (ECRR) [\[17\]](#) founded in Brussels in 1998 an independent group of more than 50 eminent radiation experts, physicians and scientists whose activities aim at providing for regulators a more accurate assessment of the health risks of ionising radiation [\[18-21\]](#). The first Chair of the ECRR was Prof Alice Stewart [\[22\]](#); currently the Chair is Prof Inge Schmitz-Feuehake [\[23\]](#). Other steering committee members initially included Prof Alexey Yablokov [\[24\]](#) and Prof Rosalie Bertell [\[25\]](#).



Mombasa, 1954

1. Early life and Education

Busby was born in Paignton, Devon, 1st September 1945, the only son of the late Col W.R. Busby MBE, MC, and Enid Lorna Whigham-Teasdale. Up to the age of 3 Busby lived in northern India/ Pakistan where he was brought up by his grandmother Winifred Hardinge. After returning to England for a short time he went with his family to Africa. In Kenya he attended St Mary's school Nairobi. After returning to the UK at the age of 13 he went to Brockenhurst County High School in the New Forest, Hampshire. He was expelled from this school at age 16 and went to live in South London where he went to Erith Grammar school to continue A Levels. He was expelled from this school also. After various adventures Busby finally obtained a BSc in Special [Chemistry](#) with [First Class Honours](#) from the [University of London](#), and then worked in research at the [Wellcome Foundation](#) Research labs at Beckenham Kent as head of the Physical Chemistry Department section investigating drug receptor interactions through spectroscopy and thermodynamics. He was elected without examination to the Royal Institute of Chemistry in 1974 and this was transposed to a membership of the Royal Society of Chemistry (RIC) when the Chemical Society and the RIC merged. He worked for a year beginning PhD research on Nuclear Magnetic Resonance spectroscopy at Queen Mary College, London but became disillusioned with the project, left and returned to Wellcome. He later (see below) gained a PhD in [Chemical Physics](#) at the [University of Kent](#), researching [Raman spectro-electrochemistry](#) [26] and carried out postdoctoral research on electromagnetic array resonance, publishing various research papers on electrochemistry and optical frequency array resonance [27-30].

He has also has worked as a laboratory technician, a dumper truck driver, a baker and confectioner, a factory worker making steel filing cabinets, a railway shunting engine driver, a railway porter, a welder and oxyacetylene cutter, a forestry worker, a inshore fisherman, a barge skipper, in marine salvage, as a yacht delivery skipper, a yacht painter and a boatbuilder and repairer. For several years he ran a small offset litho printing press for the Green Party and printed (among other things) *Radioactive Times*, *Faner Goch* (The red flag), *Green Wales*, and various leaflets, pamphlets, books and booklets. He developed Green Audit Books, many of which were printed and produced by his own printing press. He has stood in local and national elections (for the Green Party), in and stood for the Green Party in Mid and West Wales in 1994 Euro elections.



With Lorraine on MV Nidd, Thames near Windsor, 1978

2. Physical Chemistry and Boats

Whilst at Burroughs Wellcome (Later the Wellcome Foundation Ltd) between 1967 and 1974 Busby worked on applying thermodynamic and spectroscopic methods to examining dilute solution interactions between molecules in water. Among pharmacological substances he worked with and in some cases helped develop were the antibiotic co-trimoxazole, the smallpox antiviral “marboran” and the muscle relaxant arrow poison tubocurarine which he discovered by using Nuclear Magnetic Resonance spectroscopy had been assigned an incorrect formula. This discovery was later published by his head of department A J Everett, not mentioning Busby. Busby was the first to establish in 1973, in collaboration with S. Wilkinson and researchers (Crabbe) at Birkbeck College that the peptide hormone LHRH (Luteinising Hormone Releasing

Hormone) had a tertiary structure although this finding had financial significance and was not permitted to be published. He went on to develop a novel theory of drug receptor interaction, which he termed “molecular communication” and which is an area of science in which he is still occupied. Busby left Wellcome in 1974 shortly after the will of the founder Sir Henry Wellcome (which specified that all profit was to be ploughed back into research) was overturned in the UK Parliament. Busby left Wellcome for moral reasons, refusing to be associated with just another pharmaceutical company making money by US marketing techniques for selling pills. The key item was the decision by the new profit oriented Wellcome not to market a better treatment for a tropical disease (discovered by P Barratt) because the company already controlled the market with an earlier and less effective compound whilst the third world area (South America) where the disease was endemic was poor and to market the new drug would be profitless.

At age 30 he left Wellcome with his wife Lorraine (a Mathematics teacher) and three daughters Cecilia, Araceli and (the same year he left) Frances to live and cruise on a series of boats which were based near Rochester on the estuary of the Medway, Kent, UK. The first, “Glenway” was a 85 ton wooden sailing barge and Dunkirk little ship. After that came the sailing barge “MN” and then the 65 ton Humber Keel “Nidd” from Hull which they bought out of trade and converted to a yacht (Cruising Association Handbook 1979). He worked on his PhD and later as a Research Fellow at the University of Kent by commuting to Canterbury in VW Beetle from the barge. In this period, Busby also operated a 50 ton registered fishing boat, MV “Renovate”, the ex Looe Lugger “Forget-me-Not” (Olsens Fishermens Nautical Almanac 1979). He also traded as owner and skipper of a small sand-carrying coaster, working between Brightlingsea and London, the 180 ton ex Goldsmith steel sailing barge “MV Oceanic”. This later ran aground and almost sank in the Thames Estuary off the Whittaker although he was able to salvage the craft and later moved it to London, where it became a home for squatters whilst moored alongside the Crunchy Frog warehouse in Rotherhithe where the Sex Pistols group began.

In this period he worked for a time also as a steel vessel surveyor and as a yacht delivery skipper; also by salvaging anchors and mooring chains from the sea bed. The family spent time on the European waterways first on the 42ft, 17 ton Hillyard Ketch “Frances Leslie” and later on the 65 ton Humber Keel Barge “Nidd” built in 1936. They finally left Rochester in 1981 after he resigned from his Science Research Council Fellowship at the University of Kent to spend a year exploring the UK inland waterways on the 57ft Willow Wren narrowboat “Prospect”. In 1981 they moved to Mallwyd, near Machynlleth Wales and bought a ruined cottage with some land and a river. After rebuilding the ruin, and following the birth of his son Joseph in 1992 they moved to Aberystwyth. Busby later fell in love with Molly Scott who was Green Party Regional Councillor for South West England. He left his wife, Molly moved to Wales, changed her name to Cato and gave birth to Rosa in 1994. They separated in 2004.

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With four young women from Helsinki, alternative energy vs nuclear, Riga 2010

3. GREEN PARTY and Direct Action

Busby joined the Green Party in 1992, the same year he published his first books on Radiation and Health [31-33]. In that year he organised a direct action against Trawsfynydd nuclear power station in which the main gate was chained shut by activists locking themselves to the mechanisms and the media were called in. This made national news on BBC and ITV and resulted in the permanent closure of the power station in 1993 “for economic reasons”. Busby represented Wales on the Green Party Regional Council and in 1996 co-authored a conference motion to move the Green Party from a purely voting election party to espousing “all legitimate means” of effecting change [34]. Busby then became the coordinator of the “Green Committee of 100” a non-violent Direct Action Network and he was involved in direct actions in Wales (Trawsfynydd NPP), Kent (Dungeness NPP), London [35] and Bath (Solsbury Hill) [36]. He was invited to give a lecture in 1994 on the ethics of non-violent Direct Action to the Ethical Society in London [37] whose previous lecturers have included the anarchist Peter Kropotkin and George Bernard Shaw.

In 1994 he stood as an Election Candidate for the European Parliamentary elections in Wales [38]. This election was influenced by Jonathon Porritt [39] a member at the time of the Green Party, who publically endorsed the Plaid Cymru candidate in the same constituency, which led to Porritt’s being suspended by the Green Party and ultimately him leaving the party [40]. Busby argued that Plaid Cymru, the Nationalist Party of Wales (ref) was not truly Green since it attacked the “new age travellers” and supported

nuclear power in two of its key constituencies, Meirionydd (Trawsfynydd) and Ynys Mon (Wylfa) and with his lover Molly Scott Cato brought about the dissociation of the Green and Plaid Cymru party pact in Ceredigion by carrying out a guerrilla raid into the Plaid electoral territory and setting up a separate local party in Aberystwyth [41].

This may have been a key underlying issue in the pro-nuclear-power attacks later made on Busby by George Monbiot (see below) who lives in Wales and is a Plaid Cymru supporter [42].

In 1996 Busby set up the Low Level Radiation Campaign with Richard Bramhall and Molly Scott Cato, organising with Plaid Cymru MP Cynog Dafis a symposium at the House of Commons on the effects of low level radiation [43]. The LLRC began within the Green Party but soon became independent and was supported by the Goldsmith Foundation for several years. It published a journal *Radioactive Times* and has a website www.llrc.org. Busby was and is its Scientific Advisor. Busby moved LLRC outside the Green Party as he found that within the party nothing could be done due to the structure of the Green Party decision making and the existence in the decision making structure of 5th columnists, a situation which is even more endemic in the party today.



With L to R Joseph Busby, Ralph Scott, Rosa Cato, Joshua Scott, Trawsfynydd NPP 1998 (photo Jill Stallard CND Cymru)

4. Child Health and Environment PINCHE

In 2004 Busby was asked to join the Policy Information Network for Child Health and Environment PINCHE as Leader of the Science Policy Group. PINCHE was based in Arnhem, the Netherlands [44] and its aim was to advise the European Commission on priorities in the control of environmental contamination causing effects on child health. The network consisted of over 40 doctors, epidemiologists, paediatricians, toxicologists and other experts from EU countries. The Science Policy Group was aimed at developing ideas about the translation of scientific information into policy, and Busby was enlisted as a result of his experience in this area of the ways in which industry succeed in affecting bias through lobbying and through influencing research (ref I don't know much). He also became the PINCHE rapporteur on ionising radiation, on radon and also on UV Ultraviolet radiation. He was co-author of the final PINCHE report and the publications in the peer review literature of the PINCHE conclusions [44]. As a result of the deliberations, the final recommendations to the European Commission contained the advice that because of the non-level playing field produced by industry wealth, all decisions should be made by Oppositional Committees like those suggested in the 2000 book *I don't Know Much about Science* which was also the origin of the CERRIE ccommittee on internal radiation and (more successfully the DUOB) [45].

5. Committee on Radiation Risk from Internal Emitters CERRIE

In 2001, following the Green Party's EURATOM petition, Busby and Richard Bramhall succeeded in preventing the UK transcribing the EURATOM 96/29 Directive into UK Law [46,47]. The Directive permitted the Europe wide recycling of radioactive waste into consumer goods. The EURATOM campaign was joined by many organisations in Europe. Busby spoke at various European venues including the Danish Parliament and cooperated on a BBC2 Documentary on the issue of recycling radioactive waste. This and the Europe wide petition led to a meeting with the Environment Minister Michael Meacher. Following meetings between Busby, Molly Scott Cato, Meacher and representatives of the UK National Radiological Protection Board at the Department of the Environment in London, Meacher decided to form, with the UK Department of Health, a Committee Examining Radiation Risks from Internal Emitters, CERRIE. The model for the committee was the oppositional or discursive one suggested by Molly Scott Cato [45]. The members of the committee were to be chosen from the industry, from the environmental groups and from the NRPB. CERRIE was to take evidence from international scientists through a website and also organise and international conference on the issue of internal radionuclide effects and whether they could be modeled using the current system of the ICRP, which underlies all legal constraints on radioactive exposures to the public. In addition, CERRIE was to have an epidemiological sub-group where Busby, Richard Wakeford for British Nuclear fuels and Colin Muirhead of the NRPB were to jointly investigate some of Busby's studies which had previously been questioned by official government epidemiological agencies [48]. In the event, when it became clear that the joint study of breast cancer near the contaminated Bradwell nuclear power station in Essex would show Busby's Green Audit studies to be correct and the government study carried out the Small Area Health Statistics Unit SAHSU (at a cost to Essex Council of £35,000) to be wrong, the epidemiological studies were cancelled by the Chair of CERRIE, Prof Dudley Goodhead [48, 49]. Busby later discussed this issue in his book

chapter on Scientific Dishonesty [\[50\]](#) and in a presentation he made at the Royal Society in 2008 [\[50,51\]](#) . The international CERRIE workshop on internal radionuclides at St Catherines College Oxford in Summer of 2003 resulted in a number of criticisms of the current radiation risk model, in particular from the Russians Academy of Science delegates Prof Alexey Yablokov and Prof Elena Burlakova who had been invited by Busby. At this meeting, Busby presented his Secondary Photoelectron Effect theory (see below).

In October of 2003, discussions began in CERRIE on drafting the final oppositional report, with review of the science by both sides. At this point, the Minister was sacked by Tony Blair and replaced by Elliott Morley MP (who was later sent to jail for fraudulently claiming expenses). Following this the Chair, Dudley Goodhead, ensured that no dissenting report could be included, cancelled the epidemiological studies and CERRIE was rapidly wound up. The final CERRIE report did not contain a dissenting report and failed in the remit of the committee as set out by Meacher. Busby took the dissenting report which had been discussed by the full committee but excluded by it and published it separately as a *Minority Report* with a foreword by Michael Meacher. The affair was reported in the media [\[52, 53\]](#).

After the first meeting and the clear bias of the secretary Ian Fairlie in reporting what happened in minutes Busby purchased a Sony DAT recorder and every one of the subsequent meeting for the whole period was taped by Richard Bramhall in digital high resolution. These tapes are available for research and Busby hopes that one day they will; be used to send some of these people to jail. The CERRIE affair will one day be seen as a turning point in Public Health. Busby classes the nuclear radiation affair as the biggest public health scandal in human history [\[53\]](#).



With the Hiroshima A-Bomb in Kuala Lumpur 2009

6. Weapons test fallout and cancer

Busby began investigating the effects of internal radiation through an examination of what he defined as the “Wales Cancer laboratory”. He argued in 1992 that since the population of Wales had been exposed to three times the internal radionuclide exposure than England (owing to higher rainfall) and official data showed this, then there should have been an increase in cancer. He investigated the official cancer data and soon discovered that although cancer rates had been fairly similar for England and Wales, after 1984, 20 years after the major atmospheric tests fallout occurred, there began a remarkable divergence, with the Welsh age standardised cancer incidence rising steeply to about 30% more than the English incidence. In particular, there was a four-fold increase in bone cancer, a definite flag for Strontium-90, a major component of the fallout. The trend in bone cancer in Wales lined up with the trend in Sr-90 lagged by 20 years. The error in the ICRP model defined by this was a 300-fold. Wales Green Party published these results and his interpretation in a book in 1992 which was translated into Welsh [\[32,33\]](#). The book, which has become a collector’s item, was desktopped with dot-matrix typeface from a BBC 64K computer and printed on a small offset litho printing press which Busby salvaged from a printer in North Wales and which started him off on his printing phase. This ended with Sir James Goldsmith funding a state of the art Ryobi A3 offset litho machine in 1998. By 1994, Busby had determined that the cancer epidemic (which at the

time was being denied or explained away as due to an ageing population) was the direct result of the fallout exposures and he published his theory about the weapons fallout origin of the cancer epidemic in a letter to the *British Medical Journal* [54]. The Wales Cancer Registry, whose data had shown the high bone cancer rates, later stated that it was an error, there were no bone cancers, and the rates were normal. Pressure from North Wales County Councils (where cancer rates were highest) forced the Wales Cancer Registry to meet with him, the Medical Officer of Health for Wales Deidre Hine and colleagues in Cardiff and agree to provide data. In the event, small area data for the whole of Wales was provided on two floppy discs and within three weeks the Wales Cancer Registry was closed. Deidre Hine was retired at the same time. Busby wrote this up in a second book, *Radiation and Cancer in Wales* published by Green Audit in 1994 [32,33]. For the continuing story of the Wales Cancer Registry small area data, see below, *Irish Sea*.

Busby obtained financial support in 1994 from the Joseph Rowntree Charitable Trust to write these conclusions about weapons fallout and the origin of the cancer epidemic, and other issues about radiation into a larger book, *Wings of Death* which was published in 1996 and is still in print [55].

7. Cancer and Leukemia near the Irish Sea; John Steward, George Monbiot

After the closure in 1996 of the Wales Cancer Registry, cancer data was collected at the Welsh Office by the Statistics Division. Busby approached them and asked for a duplicate copy of the small area data, leaked by the WCR in 1995, in order to be sure that the original data were correct, and to obtain an extra year's data for 1990. The ultimate dataset covered all the small areas of Wales and cancer incidence by sex and 5-year age group from 1974-1989 WCR and 1974-1990 Welsh Office statistics division. The files were copied and lodged with a solicitor. Busby was not able to fully investigate the Wales Cancer Registry small area data for two years as Molly's PC was not powerful enough and there was no money to buy a good one. Following a meeting in the Irish Republic in 1997 Busby was commissioned by the Irish State in connection with a Court Case against British Nuclear Fuels to examine the Welsh Cancer registry data to see if any health effects existed on the coast of Wales as a result of the contamination of the coast with radionuclides from Sellafield. At the time Ireland had no national cancer registry and no data covering the period of major releases from the plant which peaked in the 1974-89 period covered by the WCR data. With a more powerful PC and the assistance of students from a web café in Aberystwyth Busby set about examining and making sense of the huge database which ran to 4.2 million entries. The full story of what was there was told in his 2007 book *Wolves of Water* [56] but as the evidence that Sellafield contamination was causing a significant excess of child cancer and a 30% increase in adult cancers along the north Wales coast emerged piece by piece in the media after 1999 Busby came under attack from just about everyone in the establishment.

The sequence of events was (1) Busby found high levels of bone cancer in the Welsh Cancer Registry official published data and also drew attention in books and in the

British Medical Journal to the link between Welsh cancer and the cancer epidemic, blaming both on the atmospheric weapons tests fallout. To get this into the media he organised direct actions at Trawsfynydd Nuclear Power Station.(2) Busby was given the small area data, possibly leaked it since the small area data had been refused at the meeting that occurred with the Medical Officer of Health Deidre Hine (3) Dr Hine was replaced as MoH (4)Wales Cancer Registry denied any increase in bone cancer and stated that it was an error (5) Wales Cancer Registry was dissolved and its personnel (Dr Mary Cotter, Mr Reg Fitzpatrick) sacked (6) A gap in cancer data collection was filled by the Statistics Division of the Welsh Office (7) A new Agency was set up and funded. This agency was the *Wales Cancer Intelligence and Surveillance Unit* (WCISU) and its leader was Dr John Steward.

The first piece of evidence to emerge from the WCR data was a excess of child leukemia and brain tumours on the north Wales coast where the Sellafield contamination was greatest. This was presented as a documentary by BBC Wales (John Fraser Williams) in 1998. The results were immediately attacked by the Director of the WCISU, John Steward, who stated that there were no excess child leukemias. This was followed by attacks on Busby by the (1) Welsh Office and (2) COMARE, the Committee on Medical Aspects of Radiation in the Environment. In following up this issue and examining Steward's paper Busby discovered that the new WCISU had removed 18% of all child leukemias in Wales from the old WCR database. The location of these children was never revealed, but would have been easily enough to account for the excess numbers near the north Wales coast. By 2003, Busby had been approached by HTV whose reporter had a friend who was sick with lymphoma and had located a number of children with leukemia and brain tumours living near the north Wales coast. An analysis of these children showed that there was almost a 20-fold excess of child leukemia and also brain tumours along the contaminated Menai Strait. A paper was published and a presentation made at the 2004 Children with Leukemia conference in London. [57, 58]. A second TV documentary was made about the cancer in the children. This was also attacked by Steward and WCISU in a paper published by his own department but released to the media and sent to COMARE, but since the names of the children were available he could not dispute the numbers of cases [59]. Instead he disputed the base population and wrote that Busby had made an elementary error in the populations at risk .This was followed as usual by attacks on Busby from COMARE , the Welsh Assembly and from the nuclear industry. Busby investigated the numbers and found that it was *Steward* who had made the error. Busby formally complained to the Royal College of Physicians which investigated the issue and found Busby to be correct. Steward had to apologise for his errors and COMARE also had to admit the error. Busby and Vyvyan Howard published an account of Stewards error in the base populations in the *Journal of Public Health* [60]. Nevertheless, Steward later wrote another paper in the *Journal of Radiological Protection* denying that there had been an excess of child leukemia on the north Wales coast [61] This journal's editor was the head of epidemiology for British Nuclear Fuels Sellafield, Richard Wakeford and he pitched in with his own editorial. In this paper Steward omitted any reference to his errors on the base population analysis or to any previous publications showing this. This affair was the basis for the attacks made on Busby on the internet side "junksciencewatch: chrisbusbyexposed" which has recently been taken

down. Busby believed that Richard Wakeford was behind this site writing under the pseudonym Richard D. Steward was discussed in Busby's article on Scientific Dishonesty [62] and in Busby's presentation at the Royal Society [63] on the issue.

In addition to the increases in child cancer, Busby's analysis of the Irish Sea, using the WCR data from 1974-90 showed a highly significant excess risk of all cancers defined by a sharp increase in rates very close to the sea. Busby ascribed this to inhalation of radioactive particles resuspended from contaminated sediment by sea to land transfer. The results are presented and discussed in a book, funded by the Joseph Rowntree Charitable Trust in 2007, *Wolves of Water* [56].

The question of the north Wales cancers was used by George Monbiot in his attacks on Busby in 2011. However, Monbiot based his attacks on Stewards's paper in the Journal of Radiological Protection (see above) and failed to look more closely despite being advised by Busby to do so.



**On the shores of the Baltic Sea 2009
The most radioactive sea in the world**

8. Baltic Sea and HELCOM

[CONTENTS](#)

In 2009 Busby was invited to Sweden by the Swedish anti -nuclear organisation to advise on the proposals to develop and high level nuclear waste repository at the Forsmark site on the Baltic. When he learned that the Baltic sea was more radioactively contaminated than the Irish Sea he decided to try and investigate the effects that this might be having on cancer rates near the Baltic. Together with Ditta Rietuma [64, 65] he visited the Swedish Cancer Registry in Stockholm and the Finnish Cancer registry in Helsinki, but neither would release small area data for research. They had discussions in Helsinki with HELCOM [66] and obtained all the data on radioactive contamination of the Baltic. The Director of the Finnish registry, Timo Hakulinen told him that there was indeed an excess risk of cancer near the coast of Finland but they were unable to explain this. Using published county data Busby was able to show that there was a coastal effect on Breast cancer in Sweden and he presented these findings in a meeting in Riga, Latvia in 2009 [65]. The results were attacked by a new group, “nuclear power yes please” based in Sweden. Busby and Rietuma wrote a letter of complaint to the Swedish Justice Minister which they delivered on Busby’s Kawasaki W650 motorcycle which he had ridden from Wales to Riga the previous year [67]. This event was lampooned by the pro-nuclear energy group in a spoof Movie Poster: Easy Rider, Alarmist Edition [3]. Busby obtained funding for initial work on the issue and began collaboration with Prof Olle Johansson at the Karolinska institute in 2010 to apply for an EU Grant to study the cancer near the Baltic sea, but this was turned down.

9 Forsmark nuclear waste repository

Busby was commissioned in 2012 by MILKAS, the independent Swedish Nuclear Waste Organisation [68] to critically examine the environmental impact reports published by the company proposing to build a radioactive waste repository at Forsmark under the Baltic sea [69]. Busby’s report [70] presented to the Environmental Court, argued that the entire Environmental Impact calculations were wrong since the radiation risk model employed Commission on Radiological Protection, ICRP, which was unsafe for the kinds of internal exposures that would result from the releases from the repository.

Additionally Busby calculated that the sealed canisters would explode due to Helium released by the decay of alpha emitters within the 100,000 year period required by the Swedish Environmental Court and indeed probably within 1000 years [71]. This matter is still unresolved. He pointed out that the release of the waste would make the Baltic area uninhabitable since it equated to several thousand Chernobyl accidents worth of radioactivity.

10 University connections

Busby was elected Honorary Fellow of the University of Liverpool in 2003 and supervised an epidemiology PhD student John Newby in the Department run by Dr Vyvyan Howard. The PhD was awarded and a novel epidemiological method was developed to estimate variations in age of onset of cancer [72]. Following the move of Vyvyan Howard to the University of Ulster in 2009 Busby was appointed Visiting Professor in the Faculty of Health at Ulster. He supervised research on the photoelectric

amplification of natural background radiation by nanoparticles of high atomic weight elements including Uranium. The PhD work confirmed Busby's ideas on the photoelectron amplification of nanoparticles [73,74] and a PhD was awarded to the student, Andreas Elsaessar in 2012. In 2009 Busby was also elected Guest Researcher at the German Federal Agricultural Laboratories (Julius Kuhn), Braunschweig, Germany where he collaborated with Prof Ewald Schnug on the health effects of Uranium. He is currently also Guest researcher at the Jacobs University, Bremen.



11. Iraq and DUOB, Aldermaston uranium

Busby was appointed in 2002 to the Depleted Uranium Oversight Board [75]. This followed his being invited to present evidence to the Royal Society Depleted Uranium Committee (www.duob.org) in 2001. Busby made two points to the Royal Society. The first was that the exposures to nanoparticle Uranium could not be safely assessed using the ICRP risk model, which was based on high dose external acute gamma radiation of Japanese A-Bomb victims. The second was that the DU particles travelled long distance and could be inhaled. This was based on his visit in 2001 to Kosovo with Nippon TV and alpha detecting measuring equipment. DU was found in samples and analysed in the UK by David Assinder at the University of Bangor. These results showed that DU particles were resuspended in sunlight and rained out with precipitation. His advice was excluded from the final RS report. He advised UNEP that air filter measurements would show DU and later UNEP reported this was found to be the case. Later in 2006, with Saoirse Morgan he analysed data from the high volume air samplers at the Atomic Weapons

Establishment Aldermaston, UK which indicated that Uranium from Gulf War 2 arrived in the UK [76]. This made the media [77] and was not denied by the military. The movement of DU over large distance was also supported by measurements made in Hungary at the time of the Balkans conflict [78].

Whilst on the DUOB Busby helped to ensure that the methods employed for measuring DU in urine of veterans was made as safe as possible from bias. However, results showed that the existence of Enriched Uranium in the environment made the whole project unsafe, and Busby with two colleagues on the DUOB authored a dissenting report which was published with the main report. This main report including the analysis made by Busby et al was rapidly taken off the internet by the Ministry of Defence. However, Busby and colleagues obtained title to the site www.duob.org and put the report back up. The site now has the report and also the minutes of the meetings of the DUOB.

In 2002 Busby was invited to formally advise the US Congressional Committee on Veterans Affairs and Security about the health effects of Uranium weapons. The meeting was held at the House of Lords in London. He was later appointed as an expert witness to advise the Canadian Parliament on the health effects of Uranium exposure.

Following the developments which occurred in the science of uranium and health after 2001, evidence that showed that the conclusions of the RS committee were unsafe, Busby emailed the Chair of the Royal Society committee Brian Spratt asking him to reconvene the committee. However Spratt did not reply.



12 Iraq, the Balkans, the Lebanon, Gaza, Fallujah and novel Uranium weapons

A Iraq and the Balkans

The use of Depleted Uranium in the first Gulf war in 1991 was followed by reports of increased incidence of cancer, leukemia and birth defects in population near the areas where Depleted Uranium was deployed. Busby was engaged from the beginning in this issue and argued from 1997 that the cause of Gulf War syndrome was exposure to Depleted Uranium. Membership of the DUOB (see above) enabled him to obtain data from urine measurements of troops deployed in the second Gulf war. These results showed high levels of undepleted or possible slightly enriched Uranium. After reports that the US had banned the IAEA from Iraq following the 2003 Gulf War, and the reports of unusual types of injuries in areas where missiles have been used, Busby concluded that due to the fact that technological advances had permitted DU detection from the Uranium isotope ratio, the US were now using natural uranium. Busby made several presentations on the issue of the health effects of Depleted Uranium in a number of European venues and collaborated with Iraqi doctors and scientists to obtain information e.g.[\[79-82\]](#). He was invited in 2000 by Al Jazeera to spend some time in Iraq with radiation equipment, to visit hospitals and the cancer registry and to contribute to two documentaries in Arabic.

B Lebanon and Gaza

Following a report in an Arab language Lebanese newspaper of high radiation levels in a missile crater in Khiam, South Lebanon, Busby collaborated with Dai Williams, a weapons researcher, to obtain samples from the crater. These samples were analysed by two separate laboratories using two different techniques and showed enriched Uranium [\[83\]](#). One lab, that of David Assinder in Bangor was closed down by the University shortly after these results became public. Busby concluded that some new weapon had been developed and was being tested in Lebanon by the Israelis.

Following the major Israeli operation in Gaza, Busby contacted Al Jazeera and made arrangements to visit Gaza through Egypt and obtain samples from weapons craters. The samples obtained showed slightly enriched Uranium [\[85\]](#).

C Fallujah

Between 2009 and 2013 Busby collaborated with Malak Hamdan and paediatricians in Fallujah Iraq to investigate the levels of cancer and birth defects in the city of Fallujah which had been subject to major attacks by US led forces in 2004. Busby began by employing a questionnaire epidemiology study of a type he had designed and piloted in Ireland in 2000 and later employed near nuclear sites in the UK (see below)[\[56\]](#) . Results showed enormously high levels of cancer and leukemia compared with similar control populations in Egypt. The relative risk of leukemia in the under 34 yr was 38-fold (3800 percent) which Busby reported on TV was higher than the rates after Hiroshima and

higher than any rate in any population ever studied. An alteration in the sex ratio of children born after 2004 was also found. A paper was published in the *International Journal of Environment and Public Health* [86] and received significant media attention [87,88]. Busby then obtained Uranium measurements on hair samples from the mothers and fathers of the children with congenital malformations. Results showed unusually high levels of metals including Uranium in the hair. The issue was followed up by studies of levels of Uranium along the length of single long strands of hair from selected mothers with long hair. The Uranium in the hair and in soil samples was slightly enriched. The full report concluded that a new weapons system had been deployed, probably the same one as was used in The Lebanon; a paper was published in the peer review journal *Conflict and Health* [89] and received media attention. The rates of congenital malformation were reported also in a paper published in 2012. All these papers were rejected by *The Lancet* in one case without being even sent to a reviewer. All the journals which published these papers were attacked, in one case (IJERPH) before the paper left Busby's computer. The congenital malformation rates were published by the Journal of the Islamic Medical Association of North America [90].



In Kuala Lumpur speaking at Criminalise War 2009 Event

13 Nuclear Test Veteran Children

In 2007 Busby suggested to the British Nuclear test Veterans Association that they collaborate with him of a study of the health of their children and grandchildren. This was

agreed and a case control questionnaire study was designed along the lines of a previous study carried out with the Porton Down Veterans. Results showed a highly significant excess of congenital disease in the veterans children compared with controls and also with national data. Levels of congenital disease in the children of veterans was 9-fold (900%) higher than expected and interestingly, the effects persisted in the grandchildren who showed an 8-fold excess risk [91]. The results were presented at a meeting of the Cross Party Parliamentary Committee in Test Veterans at the House of Commons (ref). Busby included these results in his Test veteran expert witness reports but was told by Tribunal Judges that it was not admissible as evidence of effects in the Veterans. A paper is being prepared for publication in a peer review journal.

14 Test veterans and Pensions Appeals Tribunals

In 2005 Busby began to appear as expert witness in Pensions Appeals Tribunals (PAT) for nuclear tests veterans who had developed cancer or for their widows. These cases were always won on appeal following his evidence to the tribunal judges. In 2008 he was contacted by Rosenblatts, the London solicitors who were taking a case in the high court on the issue of the British nuclear test veterans (Christmas Island, Maralinga, Australia) and he agreed to act as an expert witness for this case. Rosenblatts gave him access to all; the information they had and with this and with other reports he obtained through Freedom of Information requests produced a report on the issue of the health consequences for the veterans. Later he acted for several other pensions appeals, all of which were successful. Following these successes, the UK Treasury Solicitor tried to have him excluded on the basis that he was not a real expert, but this move failed. By the end of 2011 Busby had managed to obtain enough information from redacted official secrets documents (detected under Freedom of Information Act requests and ordered to be released by the judge Hugh Stubbs) to have a solid case against the Ministry of Defence. This was based on the following main issues:

1. The exposure was from alpha emitters mainly Uranium, the main component of the bombs and tests, and these exposures were not detectable with the equipment used to protect the troops. The defence assertion that the veterans doses were low was demonstrably wrong.
2. The Christmas Island bomb itself rained fallout over the whole area because the upper winds were in the opposite direction to the lower winds
3. The main Grapple Y bomb was made of fissile Uranium and may not have been a true fusion weapon; for this reason its high yield was not predicted and its altitude of detonation was too low causing seawater to be sucked up into the cloud and rained out on the troops. A secret contemporary photograph and new released contemporary meteorological data showed this to be the case.
4. The MoD asserted that there was no radon dose on Christmas Island yet coral islands absorb Radium and Uranium from sea water and so there would have been a significant radon dose; in addition New Zealand measurements detected high levels of Radium and Uranium on the island.
5. The MoD case was based on the ICRP risk model which had been shown to be unsafe.

However, this evidence never appeared in the court since Busby was removed as an expert witness following Roseblatts dropping the case suddenly at the end of 2011 and a new solicitors Hogan Lovells International suddenly taking the case, delaying it by a year. Busby was removed three weeks before the case was heard without consulting the 16 individual appellants who had retained Busby. Busby reported this in a video presentation from Latvia in 2013 [\[92\]](#) and put all his reports and the FoI documents on the internet [\[93,94\]](#).

15 Porton Down veterans

Busby carried out a case control health study of the Porton Down Veterans Support Group members in 2007. Porton Down experimental station in Wiltshire had been employed in military research on the effects of war gases including nerve gases. Young national servicemen were recruited for these experiments and told they were being used for common cold research. The results showed there were significant health effects in this group [\[95\]](#). Shortly after this study was published the group received £3 million compensation from the government. The report is being prepared for a submission to a peer review journal.

16 Uranium and photoelectrons

Busby pointed out at the CERRIE International Workshop in St Catherines College Oxford in 2004 that Uranium, by virtue of its high atomic number $Z = 92$, would preferentially absorb gamma radiation from natural background and from local gamma decays and would re-emit the energy as photoelectrons. He suggested that this may be a reason for the anomalous radiotoxicity of Uranium nanoparticles formed in weapons use and therefore explained the high levels of cancer and birth defects reported from Iraq. By 2005 he had extended the idea to Uranium in solution which he found was strongly attracted to DNA phosphate and would therefore direct secondary photoelectrons into the DNA. The idea was published in two papers in 2005 and also sent to the Royal Society journals [\[96-101\]](#). The story of their dismissal was presented by Busby at the Royal Society in his 2008 lecture on scientific dishonesty]. Busby applied for a patent for the use of soluble uranium as a radiotherapy enhancing agent but this was turned down on the basis that it was not permitted under UK patent law to patent a pharmaceutical agent . In 2008 Busby collaborated with the Director of the German Federal Agricultural Laboratory, Prof Ewald Schnug, to publish a peer reviewed book chapter on the issue. [\[102\]](#) This was picked up by the New Scientist and reported as a major news item [\[103\]](#). The experimental follow up to investigate the matter of Uranium nanoparticles and solution Uranium DNA effects was to have been carried out in the University of Ulster by a PhD student being partly supervised by Busby, Andreas Elsaessar. Busby was made visiting Professor in the department but slowly things went wrong. The Uranium research was abandoned after the first year by Busby's colleague and head of the department Vyvyan Howard and it turned out that Busby was never registered as Elsaessars supervisor. Elsaessars PhD was awarded but research was limited to looking a gold nanoparticles. However, early calculations by Elsaessar which were presented at two nanoparticle conferences confirmed the enhancement of Uranium nanoparticles even if

no further research was allowed [\[104, 105\]](#). Results were presented also at the ECRR conference in Lesvos Greece in 2009 [\[106\]](#).

Despite the Royal Society refusing to publish Busby's ideas, following the New Scientist story, pressure came to bear on the Radiation protection agencies (HPA) resulting in two papers being published addressing Busby's ideas [\[107,108\]](#). Both involved misleading calculations which purported to show that although there was indeed an enhancement of dose due to secondary photoelectrons near Uranium particles, the enhancement was lower than Busby predicted. This effect was created by the basis of the calculation which employed a fixed volume into which the photoelectron energy was diluted. In the case of the Pattison et al paper [\[107\]](#) this resulted in the absurd prediction that the enhancement would increase with the particle size. Busby discussed these papers in a separate report where he employs the Elsaessar calculations to obtain ionisation density near the nanoparticles [\[99\]](#). Busby wrote to the Royal Society editor who had refused to publish Busby's original paper and asked for space to return to the issue. He was refused space.

No one has investigated the enhancement effect of solution Uranium (Uranyl) on DNA damage by X-rays or background gamma radiation despite it being an obvious experiment, a simple experiment, and one that was suggested by Busby at the 2010 MELODI conference in Paris.

The secondary photoelectron effect also predicts phantom radiotoxicity for all high atomic number elements, Lead, Bismuth, Platinum. It explains the radiotherapeutic effects of Platinum DNA binding agents (cisplatin). It predicts the evolutionary levels of all elements in man which follow the inverse fourth power law predicted by the SET and it explains why no high atomic elements are employed by living systems. A paper on this issue was rejected by *Nature* without being sent for review.

The SET is capable of explaining the anomalous radiotoxicity of Uranium and the matter was reviewed in an article commissioned by the United Nations in 2009 [\[108\]](#) .

The radiotoxicity effects of Uranium, including conclusions drawn from the Secondary Photoelectron amplification effects were discussed by the ECRR Uranium sub-committee and reviewed in a ECRR publication edited by Busby in 2010 [\[109\]](#) and which is a free download from the www.euradcom.org site



17 Nuclear Site Cancer Studies

Following his acquisition from the Office for National Statistics and from the Scottish ISD of mortality data by cause for small areas of England, Wales and Scotland in 1999, Busby began looking at cancer in small areas and computer assisted developed methods to do such studies quickly. In particular he developed a Java program which could compare data from any ward with national data to give social class and age standardised cancer risk ratios. Between 2000 and 2009 the method was applied to three areas near nuclear plants, Somerset (Hinkley Point nuclear power station), Essex (Bradwell NPP) and Oldbury (Gloucester, Monmouth and Avon). Results all showed that breast cancer increased close to the muddy estuaries contaminated by releases from the power stations.

Other studies using the small area mortality data examined cancer in Scotland and work by his PhD student in Liverpool University John Newby resulted in a new epidemiological index being defined to examine the trend in onset of cancer with age [\[111\]](#). Busby also looked at cancer mortality near the Padeswood cement plant near Mold as part of evidence to a public enquiry.



A. Hinkley Point Nuclear Power Station

The initial study which is reported also in his book *Wings of Death* was commissioned by the local anti-nuclear Group[*Stop Hinkley*. Results showed the sea coast effect and also a doubling of breast cancer mortality in the coastal town of Burnham on Sea, downwind of the plant [\[112-114\]](#). This mortality excess remained throughout the period to 2011 as the work was updated. A further study of the same are found an excess of infant mortality as well as the breast cancer [\[115\]](#). Busby also designed an analysed an epidemiological questionnaire which was carried out by a local group in Burnham on Sea, Parents Concerned about Hinkley. Results confirmed the 2-fold excess breast cancer risk and also identified excess leukemia risks in the area [\[116\]](#).

More recently, Busby analysed environmental data to show that the area around the plant was contaminated with enriched Uranium [\[117, 118\]](#).

B. Trawsfynydd Nuclear Power Station

Busby has studied leukemia and other cancer near the Trawsfynydd nuclear plant in Meirionydd since 1993 [\[119\]](#) Working with the Welsh language ITV company S4C Busby carried out a questionnaire survey of two small towns downwind from the Trawsfynydd nuclear power station in Meirionnydd. Results which were made part of a

documentary [\[120\]](#) showed a significantly high level of breast cancer in the downwinders [\[121\]](#).

C Bradwell Nuclear Power station

Following the media attention to the Hinkley point mortality study, Busby was asked to look at the areas near Oldbury and Berkeley NPP on the Severn Estuary and also by a citizen group on Mersea to examine cancer near the Bradwell NPP in Essex. The Oldbury study was inconclusive, though the sea coast effect on cancer remained below the Severn Bridge and in the Avon estuary wards [\[122\]](#). The Bradwell study showed a significant doubling of breast cancer risk in the wards adjacent to the muddy estuary of the Blackwater into which Bradwell released its effluent [\[123\]](#). The initial study was followed up by a study commissioned by Essex health authority. The government sponsored Small Area Health Statistics Unit carried out a study for £30,000 and found that Busby was wrong and had made some mistakes. Further investigation showed that this was true but that SAHSU had also made mistakes [\[125, 126\]](#). A reanalysis by both found that Busby's original conclusion held and that SAHSU had omitted key wards to produce an incorrect result. This Bradwell study was to have been a key study carried out by the CERRIE committee but once it became clear that the breast cancer coastal effect was real, the Chair shut down the project [\[50\]](#).

18 Small area questionnaire studies

Following the developments in the 1990s whereby cancer data was made confidential by the registries, Busby developed a particular kind of house to house survey method for examining cancer rates in small areas. This was first carried out by locals in the area in the Irish Republic near Carlingford in County Louth to examine the effects of the Sellafield contamination on coastal communities [\[128\]](#). It was followed up by studies in Burnham on Sea downwind of Hinkley Point (see above) and in Llan Ffestiniog downwind of Trawsfynydd power station [\[121\]](#). It was also carried out near Plymouth dockyard in collaboration with the group CANSAR [\[129\]](#). Busby was asked to present the method at a conference in Chicago in 2008 [\[127\]](#) and also in Geneva in 2012. The most famous example of this method is, of course, the Fallujah study in 2010 [\[86\]](#). The method is presented and discussed in *Wolves of Water*.

19 Court appearances and expert witness on DU veteran cases

From 1998 Busby has appeared as an expert witness in over 40 court cases in the UK and the USA. Brief titles are given in his CV. More recently he was expert witness in a landmark case where a coroner's jury found on the basis of his evidence that a Gulf veteran Stuart Dyson had developed colon cancer as a result of exposure to DU in the first Gulf War. [\[129, 130, 131, 132\]](#)

20 Fukushima

Following the 2011 [Fukushima Daiichi nuclear disaster](#), Busby was invited to visit Fukushima in connection with a court case to evacuate the children. He took radiation measuring equipment and quickly established that the levels of contamination existed as far away as Tokyo [\[133\]](#). He established a television and internet presence from the very beginning. Appearing on BBC [\[134\]](#), ITV [\[135\]](#) and Russia Today [\[136-142\]](#) he pointed out from the start that the catastrophe was comparable if not worse than the Chernobyl accident [\[134-142\]](#) and the health effects would be worse since the local population density was much greater. In his comparison with Chernobyl and the severity of the disaster, he was later shown to be correct. He wrote a number of scientific articles about the Fukushima catastrophe including one [\[145\]](#) where he employed the risk model of the European Committee on Radiation Risk, which he had helped to develop. His prediction of the cancer yield in the 200km radius was between 200,000 and 400,000 extra cancers depending on initial assumptions. In his later TV interviews for RT he discussed the risks of [ionizing radiation](#) and the [Japanese Government's](#) handling of the disaster [\[136-142\]](#). He pointed out that the only way to accurately discover the health problems induced by the radiation would be to carry out epidemiological questionnaires and he designed such a questionnaire which was translated into Japanese. However, so far no one has organised carrying out the survey. [\[147\]](#). After Fukushima Busby developed a new method to assess airborne radioisotope contamination by analysing vehicle engine air filters, a procedure he first used in the Lebanon in 2006/2007 after the Israeli incursion and which he advised UNEP to use in the Kosovo in 2001. From analysis of vehicle filters he was able to show [\[133\]](#) that significant airborne radioactive contamination had occurred in Tokyo. He presented measurements of high levels of radioactivity in an air conditioning filter in an apartment in central Tokyo [\[148,149\]](#) and was able to show that enriched Uranium and Lead-210 were present in the airborne releases.

At the 4th International Conference of the ECRR jointly held in Berlin in May 2011 with the German Society for Radiation protection he presented calculations based on the ECRR risk model to the effect that there would be approximately 300,000 extra cancers in the 200km zone around Fukushima as a result of the releases. He also drew attention to the effects of radionuclide contamination on heart disease, particularly in children [\[150, 151\]](#) His analysis of the Fukushima disaster and the likely health effects was published as a book in the Japanese language in 2012 [\[152\]](#).

Busby also advised that Calcium and Magnesium supplements would help mitigate the genetic damage caused by the internal ingested radionuclides Strontium-90 and Uranium-238 and Uranium-235 released by the accident. A Japanese company marketed tablets based on Busby's advice. This led to attacks (hotlink Frank) on Busby suggesting that he was making money out of the project despite the fact that Busby had stated [\[153\]](#) that though he was pleased that someone was taking his advice, he had not received anything from the Japanese company and was never connected with the marketing of the supplements. The issue of the radiation protection supplements was followed up by the *Guardian* and employed in the article by George Monbiot attacking Busby [\[154\]](#). Monbiot whose conversion to nuclear energy had been derided by Busby [\[155\]](#) was lampooned by Busby in a song he wrote and performed *Newspaper Man* [\[156\]](#).

21 Chernobyl

In 2000 Busby and Scott Cato published a paper in the journal *Energy and Environment* in which the increases in infant leukemia which had been reported from Greece, Germany USA and Scotland together with data from Wales could be shown to demonstrate a statistically significant 400-fold error in the predictions of the ICRP model [\[157,158\]](#). This error was for children who could have no alternative possible cause for their leukemia since they were chosen on the basis of being in the womb at the time of the Chernobyl contamination. It was the unequivocal falsification of the ICRP model by this finding which was a major reason for Michael Meacher founding the CERRIE committee. In the event the Chernobyl infants evidence was dishonestly handled in the main CERRIE report in an appendix largely written by Richard Wakeford of BNFL.

The consideration of this critical issue by CERRIE resulted at least in new data being supplied by the Childhood Cancer Research Group, and this data was included in a meta analysis of the issue by Busby published in 2009 in the *International Journal of Environment and Public Health* [\[159\]](#). This may be seen to be the ultimate destruction of the ICRP risk model and it has not been addressed by ICRP or any of the other Radiation Risk groups (BEIR, UNSCEAR).

Busby was invited to Kiev for the World Health Organisation conference in 2001 to report on the issue of the infant leukemias. His trip, partly financed by the Joseph Rowntree Charitable Trust was assisted by the Ukrainian Green Party and involved living on a riverboat on the Dnipro. He can be seen in the Swiss videofilm of the conference *Atomic Lies/ Nuclear Controversies* where he stops the conference to change the final conference motion (which had been created by UNSCEAR's Norman Gentner to state that "no further consideration of the effects of Chernobyl were necessary as there were none"). Busby was elected to the *Association: Physicians of Chernobyl*.

Busby was invited also in 2001 by the Belarussian Ambassador to give a paper at the conference in London of the *British and Irish Charity organisations on Mitigating the Consequences in Belarus of the Chernobyl Catastrophe* [\[160\]](#) . Busby based his estimation on his earlier analysis of the atmospheric nuclear test fallout in Wales and England. Based on a ICRP collective effective dose for persons living in Strict Controlled Zones of contaminated territories of Ukraine and Belarus Busby predicted between 6500 and 18,000 extra cancers in the lifetime of those exposed [\[160\]](#).

The effects of the Chernobyl exposures were discussed in CERRIE but the committee did not consider it necessary to include any of the Russian Language papers abstracted for it by Busby and Alexey Yablokov. There were however included in the CERRIE Minority report. After CERRIE Busby and Alexey Yablokov edited an ECRR book *Chernobyl 20-Years On* [\[161\]](#) which was the first major review of the Russian Language peer review evidence of the real harm caused by the radionuclides. It was updated and reprinted in 2009. Busby is a member of the Ukraine *Association of Physicians of Chernobyl*.

22 Theoretical Developments:

A. Second Event Theory and dose response

From 1987 onwards Busby has worked on the health effects of [ionizing radiation](#), developing first the 'Second Event Theory' SET and since 2003 the 'Secondary Photoelectron Effect Theory'. The Scientific Secretary of the International Commission of Radiological Protection Dr Jack Valentin, has called the SET Theory “brilliant but wrong”. The SET distinguishes between hazards from external radiation and internal irradiation from ingested [radioisotopes](#), upon which Busby claims the widely accepted [linear no-threshold \(LNT\)](#) model substantially underestimates the risk of low level radiation (the [LNT](#) model is largely constructed from the 1958 to 2001 'Life Span Study' of the 120,321 [Japanese Atomic Bomb Survivors](#) (hibakusha (被爆者?)) who were exposed to a powerful *external* burst of [neutron](#) and [gamma radiation](#)).

Busby began in 1992 by examining evidence in cancer statistics that the differential increase in cancer in Wales and England which began in the late 1970s was caused by the atmospheric nuclear testing fallout, principally Strontium-90. He pointed to Wales Cancer Registry statistics which showed significantly high levels of bone cancer in Wales following the higher levels of Strontium-90, a known bone-seeker. He made the suggestion in the British Medical Journal in 1994 [\[163\]](#) that the fallout had caused increases in cancer in Wales. Busby obtained funding from the Joseph Rowntree Charitable Trust in 1994 to write and publish a book about this research. In this book “Wings of Death—Nuclear Pollution and Human Health” (1995) he laid out this argument and backed it by reference his proposed the Second Event Theory (SET) in 1995, in his book *Wings of Death: Nuclear Pollution and Human Health* [\[55\]](#) claiming that isotopes which decay sequentially, emitting two or more particles in a short [decay chain](#), have far greater genotoxic effects than predicted by the [LNT](#) model. In particular, Busby's SET predicts that the ^{90}Sr - ^{90}Y decay chain might be some ~300 times more carcinogenic than predicted by [LNT](#), because primary exposure to a beta particle alters a cell to the [G₂ Phase](#), in which it is highly [radio-sensitive](#), and a second particle "hit" within a few hours is more likely to cause [carcinogenesis](#) [\[162\]](#).

Despite the fact that the International Journal of Radiation Biology had refused to accept Busby's paper on SET, the theory was criticized by Cox & Edwards of the UK National Radiological Protection Board (2000 [\[164\]](#) who stated that if Busby's "biologically implausible" theory was correct and *all* irradiated cells undergo transformation to the [G₂ Phase](#), it would cause an increased risk factor of just 1.3 times and predict, on the contrary, substantial risk reduction at low doses for single emitting radioisotopes. Busby responded in the same journal [\[165\]](#) that Cox and Edwards had used an invalid set of assumptions to achieve their result and that the SET theory was confirmed by experimental results which he cited. He later showed evidence that cells in the critical phase that was intercepted by the SET were found to be 100-times more radiation sensitive than cells in G(0) or quiescent phase [\[48\]](#).

The [Committee Examining Radiation Risks of Internal Emitters](#) (CERRIE) report, on which Busby was one of twelve members, examined the biological plausibility of SET and commissioned an independent consultant to conduct a literature review of the effects of Strontium-90, which Busby had stated to be the most relevant SET nuclide. In 2004

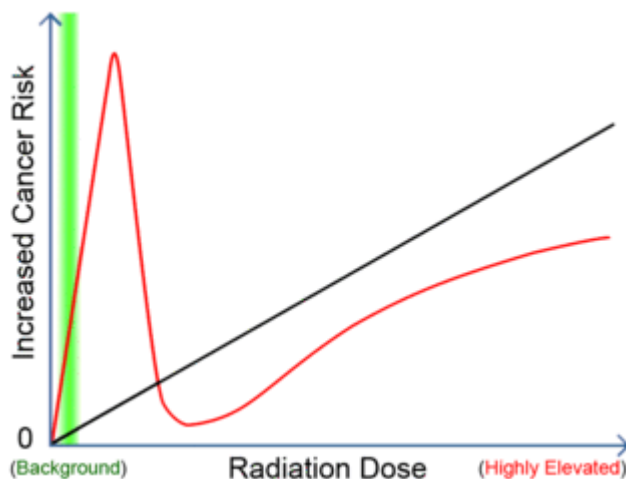
CERRIE rejected the SET by a 10 to 2 majority consensus (Busby and Richard Bramhall, dissented). The rejection was made for following reasons:

- The lack of biological plausibility for the basic preconditions of the SET
- The paucity of supporting evidence in the proponents' reviews of the SET
- The weakness of studies cited in support of the SET
- The absence of supporting evidence found by the independent review commissioned by the Committee

However, Busby argued in a CERRIE Minority report [48] with a foreword by the Environment Minister who set up the CERRIE committee, Michael Meacher that the so-called expert Barrie Lambert, whose appointment had not been discussed in committee, had failed to examine a significant number of references showing evidence for the effect.

B Dose response

Busby argues that the response to radiation exposure is best described by *The Biphasic Curve* below. Busby claims that in the low dose regime, radiation moderately above background causes more cancer than much higher levels of radiation *i.e.* a biphasic (bimodal) curve; this claim is based on the work of Elena Burlakova but has a different interpretation.[20]. Elena Burlakova is currently Chief of the Scientific Council for Radiobiology of the Russian Academy of Sciences and had shown that for a number of end-points the response to radiation dose is biphasic, a finding she ascribes to a combination of invoked cell repair efficiency and a underlying supralinear response. Busby has a different explanation to that of Burlakova in that he believes that the response relates to different sensitivity phases of cells in their cell cycle. [50, 166].



The cancer risk vs. radiation level in the low-dose regime (0 to 200 mSv) for LNT and the 'Biphasic Curve' promoted by Busby. **Background** radiation is ~2.4 mSv/year (diagram adapted by Busby from Burlakova *et al.* [167])

23 The European Committee on Radiation Risk

In 1998, following a meeting organised by the Green group in the European Parliament, Busby and some colleagues founded a new Radiation Protection Committee called the European Committee on Radiation Risk (ECRR) [ref euradcom]. By 2003, the new committee which included Molly Scott Cato [168] [at the time Busby's partner], Alexey Yablokov [24] Inge Schmitz Feuerhake [23] Rosalie Bertell [25] had developed a new radiation risk model, ECRR 2003 [18]. The model adopted an earlier method which had been considered and rejected by the ICRP which was to develop weighting factors for internal radionuclide exposures on the basis of the likely ionisation density at the chromosomal DNA. This high efficiency or hazard weightings are given to nuclides that bind to DNA (Sr-90, U-238). The method was refined in 2010 with the publication of an updated and revised model [20]. The predictions of the model were shown to be in line with results of a number of studies of internal exposure situations, notably the increase in cancer in Northern Sweden found by Tondel et al in 2004. By 2012 ECRR had attracted over 50 members including eminent researchers from European countries and from the ex Soviet countries. The 2010 risk model was made available as a free download following Fukushima and has been incorporated into Japanese law on the building of new nuclear power stations. It should be pointed out that the status of ECRR is no different from that of ICRP. Busby has been Scientific secretary of ECRR since its founding and was also senior editor of a number of ECRR reports including the Uranium report which is also a free download from the ECRR website. In 2011 ECRR opened an office in Stockholm, the Baltic Sea regional Office, aimed at carrying out research in the Baltic Sea countries. ECRR has regular international conferences, the last one being in Berlin jointly with the German Society for Radiation Protection. The proceedings of the previous Lesvos conference, edited by Busby and colleagues: *Fukushima, What to Expect* was published in 2012 [21].

24. Mobile phones and Non Ionising Radiation and Health

Busby has carried out laboratory research into the health effects on non-ionising radiation since 1998 when he was supported by the Foundation for Children with Leukemia to start investigating the interaction between ionising and non-ionising radiation. Busby's thesis is that it is the interaction between the electromagnetic field of non-ionising radiation and the fast charged particle tracks caused by ionising radiation that result in adding energy from the EM field to the particle tracks resulting in an augmentation of conventional ionizing radiation dose. Experiments carried out with X-rays, Electromagnetic fields and Ferrous sulphate dosimeters at the University of Ulster were ambivalent but did show that an effect occurred, though in the wrong direction. Busby argues that even if a tiny fraction of the energy of the EM field were transferred to the electron tracks, the effect on dose could be enormous. Busby started a collaboration with Prof Olle Johansson at the Karolinska to discuss ways in which these researches could be funded, but immediately Prof Johansson lost all his funding and also his laboratory. Sweden is highly dependent on cellphone sales through the Swedish company Sony Ericsson (ref video). Busby is currently expert witness on a case in South Africa involving non ionising high voltage power line radiation. From 2009 Busby also managed to stop several cellphone transmitters being built in USA and the UK by threatening to carry out epidemiological research before and after the switching on of the base station [169,170].



In Tanzania creating a rope to let the Geiger Counter down the drill hole

25 Uranium Mining, Africa and Canada

Busby has been commissioned to provide expert reports and inputs to the issue of Uranium mining and its health effects. He has provided reports as a parliamentary expert witness to the Canadian parliament and also was commissioned to analyse the environmental impact of an open cast mine project in Saskatchewan [\[171, 172\]](#). He was invited to speak on the issue in Pretoria South Africa and toured the mine tailing sites there in 2010. He also toured Tanzania for a group funded by the World Council of Churches, speaking (partly in Swahili which he remembered from his Kenya childhood) in local villages in the wilds of nowhere visited by land cruiser and also in Dar es Salaam.

26 ICRP and Jack Valentin

At a meeting organized by the Swedish anti nuclear organization Busby discussed the issue of the failure of the current ICRP radiation risk model with Dr Jack Valentin, Scientific Secretary of the ICRP and editor of its 2007 model. He managed to force Valentin to concede on camera that the ICRP model could not be used to predict the health effects of radiation exposures [\[173\]](#). Valentin also stated that since he was no

longer ICRP employee he could agree that ICRP was wrong not to have examined the Chernobyl health effects [\[173-175\]](#). After this, ICRP left Sweden, changed its personnel and went to ground in Canada.

27 Nuclear Justice and Human Rights

In 2006 Busby contributed to a conference in Salzburg, Austria on International Nuclear Law [\[176\]](#). At this conference he was struck by the value of Human Rights legislation to address the issue of radiation exposures. In 2012 he developed a Human Rights argument which he turned into a plea to be used in International and National courts to overthrow the current radiation risk model. Following a meeting in Vilnius Lithuania in 2012 he and Ditta Rietuma set up an organisation, the Committee for Nuclear Justice, which administered the development of the petition [\[177\]](#). In August 2012 the Petition was published and individuals were asked to sign it and send it to the Petitions Committee of the European Parliament asking for a re-justification of the current European radiation risk model, the EURATOM basic safety Standards Directive. This has a clause (introduced in 1998 by the Greens following a meeting with Busby, Rosalie Bertell and Alice Stewart) requiring re-justification of all radiation practices if new and important evidence becomes available. Busby presented this at the 2012 Human Right Council in Geneva in September [\[178\]](#) and also as an Intervention at the European Parliament itself in Brussels on behalf of the French Greens in January 2013 [\[179\]](#). The rapporteur walked out in the middle of the presentation, you can see this on the video. The petition has been also described in Geneva and Stockholm [\[180, 181\]](#).

28 Political Theory

Like many early Green Party members Busby is an Utopianist. He believes that any child could design a safer and more fair system of government and society than the current one. He is in the process of completing an outline of such a system and presented the main points at a meeting in Riga in 2012 [\[180\]](#). His main issues are with Democracy as it is currently practiced and points out (like many others have) that it does not take into consideration “personality”, assuming in some way (a mathematical reductionism, see below) that fairness follows from giving each individual equivalent chance to become politically powerful. He believes that this results in a certain type of personality becoming in charge of the system and has developed a Society to prevent this happening. Other aspects of his Utopianist vision, which includes redefining work along the lines of the ideas of Andre Gortz can be seen in his Latvia presentation [\[181\]](#). His new Utopia would be self sufficient and have a very low ecological footprint. Busby detached himself from the Green Party when it moved to become a normal political party and decided to have a “leader”.

30 Living systems

Busby’s main research is not radiation and health but is on the question of what is life and how does it work. Experiments he has carried out in his labs since 1987 have

convinced him that the process of life is not described by currently developed biological and physicochemical thinking. The processes are not chemical but physical and involve energy interchange at infrared frequencies. This is why all living creatures are hot. He has developed an alternative understanding which he presented as an abstract for a conference in Moscow in 2010 and will publish shortly.

31 Logical Positivism, Physicists and Contemporary Thought

One of the few things that Wikipedia got right was Busby's concerns about physicists. He describes this concern best in an interview he gave to the Swiss film-maker Edgar Hagen [183] and also a video he made about Einstein [184]. He argues that the last century, and continuing today, physicists wield dangerous power since ordinary people are in an Emperor's New Clothes trap where they cannot understand what the physicist is telling them but are fearful of showing what they see as stupidity. The physicist on their part, rarely understand what they are basing their viewpoint on but instead refer to others and to books, because they, in turn, don't want to appear stupid. It is a race to the bottom, where the outcome is that stupid policies (e.g. nuclear) are propped up by stupid physicists selected by and employed by dangerous psychologically flawed militaristic personalities (Rumsfeld, Thatcher). A quick look at all government advisers will reveal mathematical physicists in control of advice. The ex head of British Nuclear Fuels who writes epidemiological papers showing that radiation is OK, and who is now advising the Japanese as part of the World Health Organisation, that there will be not detectable health outcome of Fukushima is Richard Wakeford, whose PhD is in some arcane branch of particle physics. Another tremendous example of a stupid physicist is Wade Allison, whom Wikipedia has correctly reported that I have presented as such. Just watch Wade Allison in this video [185]. The problem arose from the Logical Positivist school of philosophy, where only mathematics tells the truth. This is, of course, nonsense. It is a left-brain view of the world and involves no synthetic holistic thinking.

32 Music and poetry

Busby plays guitar, 5-string banjo, viola, violin, nyckleharpa, diatonic accordion, bandoneon, piano and concertina. He also writes and performs his own songs as "Carefree" the name of a yacht he owned. See www.myspace.com/christobusby

There is also a small poetry book [186] where some of the song lyrics originated.

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