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Further information about the latest study of UK nuclear test veterans (2022 *J. Radiol. Prot.* **42** 034501)

Susie Boniface

Following an invited editorial by Gerry Kendall and Mark Little published in the JRP on 11 May 2022, with further information about the 4th government study of UK nuclear test veterans by Gillies and Haylock, I'd like to add some more, as a journalist who's been investigating these tests for the Daily Mirror since 2002.

They know far more about radiation epidemiology than I, and I have the greatest respect for these gentlemen's expertise, on which I have relied myself. After spending 20 years interviewing the survivors and descendants of those who took part in the weapons testing programme, I have learned a bit about the humans on the other end of the statistics.

While what they write is true, it fails to give your readers the full context on several points. For example, they describe the 'minor trials' which took place in Australia between 1953 and 1963 as 'investigating weapons design and safety'. It gives the impression these were precise, technical tests in which safety was a key concern.

In fact, a Royal Commission found these 593 radioactive experiments spread plutonium across a wide area of the Australian Outback. Three subsequent clean-ups, and a £20 m settlement by the UK government, did not stop Monash University finding last year that the soil remained radioactive (www.monash.edu/science/news/current/from-fire-to-dust-plutonium-particles-from-british-nuclear-testing-in-outback-australia-more-complex-than-previously-thought,-scientists-warn). Although most of the land was returned to the custodianship of its original owners, the Tjarutja people, in 2014, some is still considered uninhabitable. This part of the weapons programme was neither precise, nor safe: some of the experiments included putting plutonium, uranium, and beryllium in fires, directed up chimneys, to see where the wind blew it. Unsurprisingly, they did not find it all.

The latest research (<https://iopscience.iop.org/article/10.1088/1361-6498/ac52b4>) reports that those who served at these tests in Maralinga are 2.3 times more likely than controls to develop cancers of the brain and central nervous system. One pilot, whose widow I interviewed, had flown 'sniff' planes through the clouds of some of these 'safety' experiments, and later developed cancer in his throat, groin, and five separate brain tumours. Decades later, she sobbed on my shoulder for him, and the six babies they lost through miscarriage.

Kendall and Little state that 'contrary to press reports' a 1988 National Radiological Protection Board paper of which Mr Kendall was one of nine authors was 'freely available'. This seems to be a reference to that fact that in March, I reported in the Daily Mirror that 140 pages of data produced for that study had never been published. As I reported, the Stationary Office confirmed this to be true (www.mirror.co.uk/news/uk-news/shame-7-governments-cover-up-26532426). Only a summary was made public, across seven pages of the BMJ, with the remaining mass of data rather misleadingly described in footnotes as 'description of the methods used'.

Researchers at the NRPB, and its successors Public Health England and UK Health Security Agency, had copies, but veterans did not. It was possible to find this extra data only because, with the latest study, all previous versions were put online in the same place, with what are now called 'companion reports' alongside the 'summaries'.

It was after digging through these, and cross-referencing with the latest update, that I was able to find reference to a document called NRPB-R214 (https://khub.net/documents/135939561/174098625/NRPB_R214.pdf/06927d3f-b887-d8e8-a865-885d2437c89b)—the full 140 pages from 1988. Despite many years of Parliamentary debate, this document was cited in Hansard just twice, (<https://hansard.parliament.uk/search?startDate=1983-01-01&endDate=2022-05-25&searchTerm=nrbp%20r214&partial=False>) without mention of extra data. It was cited by a handful of academics and included in Freedom of Information requests, but again, each time, without an accurate description of its contents or reference to a 'summary'.

I have been told somebody sent me a copy of it several years ago, along with many other documents, although I no longer have that email to verify. As neither sender or recipient knew the significance of its contents at the time, it would have been impossible for anyone to know this was a second, and unpublished, set of data.

I asked veterans active in the campaign in 1988 if they remembered the study. 'Yes,' they said. 'A few pages in the British Medical Journal.' When I told them there were another 140, full of tables, and asked if they had seen it at the time, the answer was an astonished 'my God, no'.

The only way to find any of these references now is with the code NRPB-R214 and the internet, which did not even exist at the time. Describing this report as 'freely available' to the public (who would have had to pay for it in any event) seems a stretch, although it may have been available to the authors.

These 140 pages show rates of leukaemia among test veterans were 2.5–3.3 times greater than controls, for those who served at weapons tests in the Pacific Ocean and the minor trials. And among servicemen not thought to have been exposed or even present at explosions, leukaemia was 6.5 times that of controls. The 1988 authors could think of no explanation for this, but the veterans can: fallout. The health risks are so hard to calculate that the political and financial cost of dealing with it would have been immense, had it been known. Many more veterans may also have had war pensions, and widows' pensions, approved, with access to this data. As it is, according to records of a 2012 meeting in Number 10 that I acquired through an FOI, only 1.6% of pension claims by test veterans are thought to have been approved (the British Nuclear Test Veterans Association and its then-patron, John Baron MP, told the Minister for Veterans at the time that of 1800 nuclear test veteran war pension applicants, only 30 had been successful, 25 on appeal).

The full document also shows that the 1988 authors made some surprising assumptions. They decided that all test veterans who had died abroad would have died from accidents or heart disease, and therefore could be discounted. Only a few months ago, one sniff pilot I was in contact with in the US died of his 12th bout of cancer. They also had an 'unsupported', 'tentative hypothesis' that test veterans smoked less than controls, thus explaining why more of them did not die from smoking. The veterans would tell you they were dying from radiation instead, and indeed Kendall and Little now confirm (<https://iopscience.iop.org/article/10.1088/1361-6498/ac6a23>) the veterans smoked slightly more than controls. This appears to be a reversal of position from one of the original authors.

Page 85 of that unpublished study discusses 'the over-representation of leukaemia types that are known to be produced by ionising radiation'. The principle reason the 1988 authors gave for not linking these deaths more firmly to the weapons tests was that the radiation doses recorded for the men did not appear to rise in line with their risks of leukaemia, cancer, or death. Again, the veterans would say: fallout.

The NRPB found 79% of servicemen at these tests had no health physics record (https://khub.net/documents/135939561/174098625/2003_NrpbW27.pdf/fab07898-a864-e9a4-3f6a-066d312d7f03—page 4). Unless the commanding officer expected you to be exposed, no effort was made to monitor you. The Mirror has uncovered documentary evidence (www.labrats.international/_files/ugd/71499a_597c353a917c4834b579e8122f874789.pdf) dosimeters malfunctioned, were so insensitive they could record only doses hundreds of times greater than the 'safety' limits that were set (and which were not that safe—the lowest being similar to a daily CT scan, at Operation Mosaic in 1956, for example), and in any event were incapable of measuring alpha radiation, a major constituent of fallout.

Kendall and Little do not address the main failing of this research, which is that it was not designed to answer the questions veterans asked. The studies look only at verifiable deaths in the UK, with little effort made to establish how many veterans are alive. For example, the figures for Operation Hurricane in 1952 state 1398 took part, and around 1000 deaths were recorded (<https://cfm-live-content-bucket-iop-org.s3.amazonaws.com/journals/0952-4746/42/2/021507/revision3/jrpac52b4supp1.docx?AWSAccessKeyId=AKIAYDKQL6LTV7YY2HIK&Expires=1654085352&Signature=WzRG7P6KNMKb3G84vw2a60yh6bE%3D>—table S19a). The remaining 400 'survivors' are a mystery to the half a dozen or so Hurricane veterans I have tracked down over the years, and whose address books are full of shipmates' names, crossed out with every death. The 1960s and 1970s were a time of widespread migration, and many servicemen fell in love with a foreign girl or moved to countries they had been posted to. How much proof may have gone with them, we will probably never know.

Nor have any of the studies looked at the veterans' ill health in general, or that of their families. Self-reported, but peer-reviewed, surveys (www.mirror.co.uk/news/uk-news/britains-nuclear-test-veterans-victims-4460976) have found wives have miscarriage rates three times the national average, infant mortality is five times the norm, and their children have ten times the usual rate of birth defects. Even the Ministry of Defence's own survey in 2011 (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/16592/20111027NTVsMODHealthNeedsAuditFinal.pdf) found 83% of the surviving veterans had up to nine chronic health conditions. The effect this has had on the quality of their lives, mental

health, family relationships, even the cost to the NHS, has never been examined. In the official studies, all that is considered is the length of life and reason for its end, not all the difficulties that may have unnecessarily preceded it.

While radiation may be an easy explanation for these things, it is not the only possibility. Yet the UK government has never investigated the cause of this phenomenon with an open mind, nor suggested a viable alternative. This pattern of illness is repeated among Pacific islanders, US downwinders, indigenous peoples, Russian atomic veterans, and Australian, American, New Zealand, and Canadian troops whose only common denominator is that they were all the people closest to nuclear explosions (www.jstor.org/stable/j.ctt1ws7w90).

Perhaps it is a mass delusion, born of Cold War fears. Perhaps there is some other toxin responsible. But it is telling that no nuclear power has ever tried to find out what caused all those people, in all those places, such similar problems. Newspapers like correlation more than scientists do, because it is simple; but often, the obvious answer is the bleedin' obvious. There is a reason radiation is used as a weapon, after all.

Three case studies stand out in my memory. One veteran who along with several others in his unit developed a layer of skin growing between his eyelid and eyeball which needed regular removal; another from an Royal Air Force ground crew posted to Peru to decontaminate planes used to secretly sample French bomb tests, who all retired to the same village and most of whom ended up with throat cancer; and a navy veteran from Operation Grapple who has so far had more than 200 basal cell carcinomas removed from his head and neck. He got a war pension for exposure to UV radiation from a thermonuclear explosion 93 million miles away, but not the ionising radiation from the H-bombs at the end of his nose.

In these studies, the first veteran and his lifetime of pain and hospital appointments would not merit a blip. The second one, and his comrades, would be a dozen cases among 22 000, not half a unit with the same rotten death. And the third veteran would count as one incidence of cancer. If he dies of a heart attack he will be considered, by this research, to have had a good life, when in fact he is spent most of it in hospital having bits of his head sliced off.

Veterans I have interviewed who've had multiple cancers, and who lived and died abroad, are likewise not included. I am sure those who designed this study hoped those deaths it could verify would provide a definitive answer, but as Kendall and Little make clear, it has not.

This is why so many of the test veterans believe this research was designed to not show the truth. Not because the scientists or statisticians did wrong—but because it does not look at what the veterans can see every day.

It is interesting to see they suggest urine monitoring today may produce evidence of long-lived radionuclides among test veterans. Perhaps the UKHSA could suggest this to the Ministry of Defence, along with independent analysis of the blood counts which veterans tell me were repeatedly done during the tests, but which their military health records, puzzlingly, show no record of.

Finally, Kendall and Little refer to the Healthy Soldier Effect, and how the test veterans 'were fitter than the general population and would be expected to have better health' which is why 'comparisons should be made with a control group of servicemen and civilians'. Despite my patient explanations, the MoD appears unable to grasp this concept, and is still telling journalists who inquire that test veterans have similar mortality to the general population, implying there is no story. It is perfectly fair to question whether the Daily Mirror is presenting the science accurately; but it is more germane to ask if the state is twisting it intentionally.

Kendall and Little end with the same conclusion as in 1988: that further studies are needed. As the latest version reported, most of these men are in their 80s, a few in their 90s. A fifth study into the health of men who, as the latest research shows, have spent the past 70 years dying, and dying from cancer, in higher numbers than other servicemen would be an appalling continuation of a gross injustice, which is to delay recognition and validation of their experiences.

The role of radiation epidemiology is complex and vital, but it is not supposed to hurt. Science is always seeking more proof, but in the case of these veterans that has been used against them by the state as another weapon, this time to deny the evidence of their own eyes. Another consistently-raised cause of mortality among the test veterans is suicide (<https://cfn-live-content-bucket-iop-org.s3.amazonaws.com/journals/0952-4746/42/2/021507/revision3/jrpac52b4supp1.docx?AWSAccessKeyId=AKIAYDKQL6LTV7YY2HIK&Expires=1654085352&Signature=WzRG7P6KNMKb3G84vw2a60yh6bE%3D>). The precise reasons for their self-harm, like so much else, have not been investigated, but reasonable people might conclude that insistence on repeating a study which has already established a pattern of illness with no explanation beyond

radiation exposure, and the government denials of recognition which are consequent upon that, may have had an impact.

I have been told that a study based on these early NRPB reports, into the children and grandchildren of test veterans and controls, is theoretically possible. Perhaps it could be done, and perhaps the question will move on significantly later this year, when Dr Rhona Anderson at Brunel University is expected to report back on her study of inherited genetic damage in family trios of test veterans, wives, and children.

We already have evidence enough that it is time for these veterans, at the end of indisputably painful and grief-filled lives, to be given the peace that can only come with research into the impact on their children, and formal government recognition. Many thousands have died beneath that black cloud of official doubt, and it is high time that it was lifted.

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