

## The Limitations of Current Epidemiology

a presentation given by Richard Bramhall of the Low Level Radiation Campaign  
to

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Well I'm not going to give you an academic analysis of the Limitations of Epidemiology, partly because I am not an academic, and partly because we already have a good and relevant analysis from Steve Wing of the University of North Carolina, which was passed to the Committee by the Secretariat. In a 1994 paper (Wing 1994) Wing criticises the reductionism into which modern epidemiology has passed and argues for a more holistic approach ("holistic" is my choice of word, not his) in which the context of any inquiry is broadened. For example, "...a focus on high fat diet as individual behaviour fails to address consequences of the animal-oriented agriculture systems that support mass high fat diets. These consequences include production of export crops in the context of local malnutrition, use of vast quantities of non-renewable energy resources, occupational exposure to pesticides and herbicides, topsoil loss and generation of greenhouse gases."

I chose this extract in the light of Sir Richard Doll's observations before lunch in which he qualified his definition of the "environment" as a factor in cancer incidence.

To this I would add, in the context of last week's publication (Bingham 2003) of findings of an association between breast cancer and high fat diets, the possibility that the cause of the increased risk is Strontium-90 in the milk and dairy foods that present the highest risks. For Sir Richard "environment" now includes "diet" but the considerations I have referred to put yet another twist on "environmental" factors.

I feel that Wing's critique provides a very useful way of understanding the otherwise confusing contradictions of today's debate. This is in itself another Limitation - epidemiology tends to leave the public and politicians with their heads in a spin. The public and politicians are our clients, and it's my own involvement with them that has led to the inclusion of this presentation today. Early in the CERRIE process I was asked to provide a short paper, which I called "The Politics of Cancer Epidemiology". It was intended to give the Committee a glimpse of what it is like to address these issues from the public's point of view, getting involved in a local issue (the example I used was a proposed incinerator for radioactively contaminated waste), going to public meetings which generate more heat than light, and Environment Agency exhibitions where local people feel patronised. Such events (and I would include this Workshop) do nothing to reassure people in the streets. They quickly realise that the science of radiation protection at environmental levels is desperately unsafe but that they are going to have the pollution forced on them anyway.

In the case of the Bradwell incinerator the protests of local people produced an immediate and curious response from the local Health Authority, who commissioned the Small Area Health Statistics Unit (SAHSU) to look at cancer rates locally. This was curious because it was so quick, curious because it was a retrospective study of a prospective exposure, and curious because it was designed to look at cancer in concentric rings around the power plant, rather than following the water-borne radioactivity. We pointed out the problematic nature of this method in advance, it was questioned by the local people, and the SAHSU report admitted its flaws. Such a misuse of method is a Limitation of Epidemiology.

At the same time Green Audit did a quick study (it was being paid for by local campaigners so it had to be quick to be cheap - it cost £400, whereas SAHSU usually charges £30,000). It was meant as an alternative to show people that bad science was being used to give false reassurances. Green Audit looked at the hypothesis that risk was driven by sea to land transfer. You have already seen the results in a previous presentation by Dr Busby and in Dr Richard

Wakeford's attacks you have some indication of the disagreements over data quality. The Interim CERRIE report alludes to this aspect and it brings me to two further Limitations of Epidemiology. One is that if we are interested in a hypothesis that risk is driven by how close to the sea people live, then data at ward level are of limited use, given that in rural areas each ward may extend two or three miles inland. The second is that access to data is unequal, even at the ward level. In Bradwell the public quickly understood that incidence data was needed, as opposed to the mortality data Green Audit had worked with. Local people including the Member of Parliament called for incidence data to be made available. They feel that this information is theirs, and that it should be used to analyse the risks they are exposed to. Forget it. The Cancer Registries have put up the shutters. Since the mid-1990s we have been running into this problem, and in passing may I pre-empt your objections - the answer is NOT to apply for Ethical Research Committee approval. We have already had experience of a proposed study which straddled the boundary between Oxfordshire and Berkshire. One committee approved the research, the other did not.

More recently the Cancer Registries have adopted a rule of questionable legal status which in effect means that ward level incidence data will not be released. They won't even release it to Government Ministers - Michael Meacher was trying to get hold of such information right up to the time he was sacked as Environment Minister. He complains that he got no help from civil servants and it's hard to avoid the conclusion that the secrecy is not driven by the stated reason - patient confidentiality - but by fear of what the data will reveal.

Now, there may be a view in this room that ecological epidemiological studies are the least reliable, and I'm not going to try persuading you either way. My point is that the public does not see them as unreliable. Using common sense the public says "It's our locality, our risks, our children, our data, our health - let's not bother with airy-fairy stuff about Hiroshima and Nordic leukaemia, let's have the data and have a look." And if the authorities won't hand over the data the public goes out and gets it. Examples in the British Isles are in Dundalk, where the cancer cases are like a string of Christmas tree lights along the shore, and Burnham on Sea (Somerset), where a doorstep survey showed significant excess risks.

It's not only local campaigners who are thinking this way. The BNFL National Dialogue, which brings together greens, the industry and regulators and is very interested in CERRIE because its outcome could have a very large impact on the future of BNFL, wrote to the Committee urging a co-work approach. By this they meant all sides sharing data and agreeing protocols in order to avoid the erosion of public trust in the people who are supposed to be telling them what risks they might run.

We have made some good progress in respect of SAHSU's proposed new work on risks near the sea. This is mentioned in CERRIE's interim report. More remains to be done, particularly with extending the ecological questionnaire type of study pioneered by the Burnham on Sea volunteers. There are many ideas on the table but no real progress as we are stalled by anxieties over the ethics of obtaining data by means of questionnaires. Another stumbling block is refusal to provide funding for the unsalaried members of CERRIE to take time off from their day jobs to do the basic fact finding. I doubt that these problems will be overcome within CERRIE's lifetime.

In this short talk I have tried to steer you in the direction of addressing epidemiological issues, not as inhabitants of ivory towers but bearing in mind the needs and feelings of the people who are at the sharp end of all this. It is often heartbreaking to have to hear from people who are worried about the risks. You might respond to me by saying "Well, stop alarming them, then; stop being an irresponsible, scaremongering environmentalist", but I should not accept such an answer. What I really want is to hear some opinions about issues like co-working, data acquisition, and small area epidemiology - by which I mean areas smaller than wards with monitoring of the local environment.

## References

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