

Prospects for independent research following the Fukushima Daiichi accident

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Scientific research is an expensive activity, so the key to how **independent** and therefore **trusted** research into the health consequences of nuclear accidents can be carried out lies in its funding and the “actors” who might **encourage** it, **fund** it, or **perform** it.

Who is responsible for protecting public health?

The first responsibility for protecting public health lies with the State. However, in the case of the production of nuclear energy States are rarely independent of the energy producers. In any case, even were they entirely private enterprises nuclear energy producers are unable to obtain insurance for the cost of accidents. Therefore, they are effectively insured by the taxpayer. This creates a conflict of interest for State actors: they are duty-bound to both minimise the economic cost of accidents and compensate those affected by the accident. Clearly, in all practical situations this represents a trade-off between the protection of public health and the protection of the economy.

National governments usually appoint and are guided by national radiological protection agencies staffed by experts in radiation sciences. There may be other organisations as well which ensure standards are adhered to. Often several government departments have roles to play. In the UK now has the Health Protection Agency (HPA) to deal with radiological issues. Formerly, these responsibilities were held by the National Radiological Protection Board (NRPB) formed in about 1970, and before that the Medical Research Council (MRC). From personal experience I know that the MRC was truly independent, funded by Parliament. The NRPB was always more political than scientific, being formed out of the Health Physics Department of the UK Atomic Energy Agency (UKAEA). The NRPB, for example, mis-applied epidemiology to evaluate the extent of illness suffered by veterans of nuclear tests in the Pacific. This has so far relieved the government of addressing compensation issues. Such bodies, even if under Ministries of Health may not be independent.

National governments subscribe, with taxpayers money, to the international organisations acting under the banner of the United Nations. For nuclear energy producers membership of the International Atomic Energy Agency (IAEA) and the United Nations Scientific Committee on the Effects of Ionising Radiations (UNSCEAR) are virtually mandatory and the World Health Organisation (WHO) is subscribed to by almost every Nation State. Are these organisations independent?

The primary mandate of the IAEA is to advocate the benefits of the peaceful use of atomic energy and this includes nuclear power. It also has a mandate to ensure that devices that emit radiation are used safely. This appears innocuous, indeed appropriate. However, the IAEA extends its “safety mandate” well beyond the scope of ensuring that x-ray machines and particle accelerators are appropriately used. Its intervention in the follow-up to the *public health* consequences of nuclear accidents is in my view entirely inappropriate.

The IAEA is guided in terms of what is radiologically safe by the International Commission on Radiological Protection (ICRP), a body set up under the auspices of radiological professionals in the field of medicine, but which has since become self-perpetuating in that its future members are exclusively appointed by its present members. Its membership includes former staff of the IAEA and members of government advisory bodies. It, therefore, trades some of its independence in order to gain expertise. The IAEA has been very successful in forging links to national bodies responsible for enforcing standards at the national level. It is increasingly difficult to find expertise that has not been involved with the IAEA. For example the chair of the expert committee advising WHO on the dosimetry of the Fukushima Daiichi accident, Jane Simmonds is a staff member of the HPA, formerly of the NRPB and many times a consultant to the IAEA.

The WHO should be an independent organisation with access to independent expertise. However, the health effects of radiation are a very small fraction of the overall mandate of the WHO and its funds are, therefore, severely limited for this purpose. It is a party to a bilateral agreement (such agreements are held between all UN agencies) to consult with the IAEA before embarking on projects in that area to avoid duplication. However, as an ex-WHO staff member, I have never seen that agreement cited to influence the independence of WHO. Its independence is compromised by its lack of expertise on radiation and health issues and, at the senior management level of the organisation, where, on an informal basis, managers consult with similarly ranking staff members of the IAEA.

A personal perspective

I started my career in radiological protection with the UK Medical Research Council in 1971. At that time the MRC fiercely defended its independence from the UKAEA. I believe at that time and for the following decade the MRC was truly independent.

The WHO supports a section dedicated to research on cancer: the International Agency for Research on Cancer (IARC). To date IARC has maintained a high degree of independence and produced important results on the quantitative effects of exposure to ionising radiation. These results have on occasions been ignored by the WHO Headquarters Office in Geneva. A case in point is the press release made jointly with IAEA announcing the publication of the Chernobyl Forum in 2005. Under the heading of “Chernobyl: the true scale of the accident” it claims there will be no more than 4000 fatalities resulting the radiological consequences of the accident. This figure is grossly misleading (according to careful studies led by IARC the figure is several times higher). The figure of 4000 and can only be obtained by invoking a threshold below which there are no effects. Such a threshold has never been empirically demonstrated, if fact, just the opposite including research emanating from IARC.



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5 SEPTEMBER 2005 | GENEVA - A total of up to 4000 people could eventually die of radiation exposure from the Chernobyl nuclear power plant (NPP) accident nearly 20 years ago, an international team of more than 100 scientists has concluded.



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IARC is currently conducting a European Commission project Co-CHER which is a follow-up to the recommendation of the of the European Commission project (2008 to 2010) Agenda for Research on Chernobyl Health (ARCH) project to conduct a Life Span Study (LSS) of Chernobyl liquidators. It is remarkably difficult to find much detail about the Co-CHER project that is due to report in June this year. Its website does not disclose the membership of its advisory committees.



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Structure

Scientific Expert Groups

Internationally renowned scientists with special expertise in the following areas will be invited to be part of the four Scientific Expert Groups:

- epidemiology and medicine
- molecular biology and pathology
- dosimetry
- mental health and risk communication

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The EC, which apparently tried to evade following up the recommendation of the ARCH project has insisted that Co-CHER was run under the auspices of/ or at least with participation from, MELODI. This immediately threatens the independence of IARC: clearly the EC is not interested in independence.

The United Nations Scientific Committee on the Effects of Atomic Radiations (UNSCEAR) commands an overseeing role on the subject of the scientific assessment of the effects of ionising radiation within the UN family. It is supported mainly by those countries operating nuclear reactors and they provide the scientific expertise for the committee, which periodically produces reports on various aspects of the subject, including in 2013 on the Fukushima Daiichi accident. There is, therefore, a substantial conflict-of-interest in that States with a conflict of interest nominate members to the committee. With respect to conflicts of interest UNSCEAR publishes a blanket statement that members of its committee declare they have no conflicts of interest, but it fails to publish CVs and publication records of its committee members. I criticised UNSCEAR's 2013 report on this point and they answered some of those criticisms in a "White Paper" in 2015. Then would have been a fine opportunity to provide the information I requested, but it was not forthcoming.

At the European level the European Commission conducts its radiological protection research under its energy programme, specifically the EURATOM treaty as published in the Official journal of the EU in 2012. The Commission's role is: "*It shall be the task of the Community [EURATOM] to contribute to the raising of the standard of living in the Member States and to the development of relations with the other countries by creating the conditions necessary for the speedy establishment and growth of nuclear industries.*" Thus the EC has a division responsible for both the advocacy of nuclear power and for radiological protection research. The Commission supports most of the research into the effects of ionising radiation that takes place in Europe through its MELODI platform. As things stand at present, therefore, the European Commission has a conflict of interest and cannot be regarded as independent.

In response to the Fukushima Daiichi accident several citizen scientist organisations have sprung up. Similarly, in Europe; the independent WHO, for example. These organisations do enormously valuable work in many respects, but they do not have funding or resources to undertake scientific research.

Important work in Japan on butterflies and other wild-life and, of course, the work of Tim Mousseaux and his colleagues, among others, much of which is independent, is under funded and subject to harassment.

Furthermore, despite its clear relevance to human health effects in fallout contaminated areas, the results of this work are ignored by organizations such as UNSCEAR.

The concerns of local scientists and doctors in the contaminated regions have been ignored in the by the UN agencies and European and US research establishments at least since the involvement of the IAEA in conducting the International Chernobyl Project, which was published in 1991. This report was generally regarded as a “white wash” and it is becoming clear that it did not disclose all the information on effects that it had at its disposal.

The wild life studies clearly point to what are generally regarded as genetic effects and just as clearly have implications for human health.

Research on genomic instability has all but disappeared from the MELODI research agenda since 2010, when the dedicated EC Project, Non-targeted Effects of Ionising Radiation (NOTE) failed to discover an underlying mechanism. The consequence has been that only health effects regarded as “genetic” are considered as being due to radiation. The fact that cancer is not a genetic effect is studiously ignored even though it was established in 2000 by a study of identical twins in Nordic countries.

Priorities for Research

One priority for independent research would be to see if similar effects detected and reported in the Chernobyl fallout regions by local doctors can be confirmed, or ruled out, in the exposed population in Japan.

Another issue that arose from the Chernobyl accident was the potential transgenerational effects on the offspring of exposed fathers. A recent publication of mortality experience of the children of the atomic bomb survivors shows no indication of hereditary effects related to radiation exposure, either overall, or for cancer. Neither have the effects on offspring of a father's exposure, as observed after Chernobyl, been observed in the children of bomb survivors. Never the less there is substantial evidence that in some circumstances these effects do occur. There is, therefore, an important issue to be resolved.

How to facilitate independent research

There would appear to be only two options:

In European terms to separate responsibilities of the Commission for nuclear energy and radiological protection research into two separate divisions and provide independent oversight for radiological research.

To separately fund WHO's activities in radiological protection in a way that insulates it from the influence of the IAEA and the EC.

**Thank you for your
attention!**