

Submission to ICRP
In Response to

Draft "Radiological Protection of People and the Environment in the Event of a Large Nuclear Accident"

The following is a lay submission from the Australian perspective.

I refer to the document "Contamination of Japan compared to the Cleanup Criteria of Maralinga Nuclear Test Site, South Australia" by P. Langley, available here:

https://www.academia.edu/8400938/Contamination_of_Japan_compared_to_the_Cleanup_Criteria_of_Maralinga_Nuclear_Test_Site_South_Australia

The Cleanup of Maralinga Nuclear Test Site was completed in the early 21st century and allowed the survivors and descendants of those First Australians who had been forcibly removed from their homeland to make away for military industrial nuclear trials.

A government authority known as the "Technical Advisory Group" or TAG, described the decontamination level to be applied to the Maralinga Lands as follows:

"The aim of the Maralinga rehabilitation was to ensure that the risk to potential inhabitants from exposure to radioactive contamination would be acceptable.

The dividing line between acceptability and unacceptability of risk [TAG, 1990] was determined to be an annual committed dose of 5 mSv, assuming full time occupancy by Aborigines living an outstation lifestyle. This corresponds to an annual risk of fatal cancer following the inhalation or ingestion of contaminated soil of not more than 1 in 10,000 by the fiftieth year of life [Technical Advisory Group, TAG, 1990]. The value of 5 mSv is broadly consistent with the intervention level of 10 mSv that has recently been proposed by the International Commission on Radiological Protection [6.1 in ICRP, 1999] and which is under consideration by the International Atomic Energy Agency [IAEA, 2002]. Both of these international bodies are proposing that, in future, a generic reference level of around 10 mSv be set, under which intervention is generally not justified."

Two actions were undertaken to achieve this limitation of possible radiation dose. First, where levels of radioactivity were so high that a dose of 5 mSv could be received in a short time, the contamination would be removed and safely buried in disposal trenches. In areas where there was no acute hazard but permanent occupation could result in doses exceeding 5 mSv, restrictions on land-use would be imposed....."

"MARTAC criteria for the removal of contaminated particles and fragments states that no particles of ²⁴¹Am activity greater than 100 kBq and no observable contaminated fragments should remain outside the soil-removal contour or within the rehabilitated area at the conclusion of the operation.

There should also be no more than an average one discrete particle of activity greater than 20 kBq per 10m²....”
(Source: “Maralinga”, ARPANSA, Australian government.)

On reading the ICRP draft document “Radiological Protection of People and the Environment in the Event of a Large Nuclear Accident”, I find that the draft contains no mention what so ever of the removal of discrete particles of activity of any kind, of any activity in area of contaminated land.

I refer to the following document: I refer to R. Pollanen, author of the STUK report “Nuclear Fuel Particles in the environment – Characteristics, atmospheric transport, and skin doses. R. Pollanen, STUK, Radiation and Nuclear Safety Authority, University of Helsinki, Department of Physics. Page 4 and pages 53 and 54 are of immediate interest in any technical debate and in any discourse that informs and receives public interest and knowledge in these matters. It is a very good publication. It is available currently at http://www.iaea.org/inis/collection/NCLCollectionStore/_Public/33/043/33043484.pdf I believe it is also available at non IAEA online repositories.

In particular, Pollanen states the following: “In a state of an acute radiation emergency, the recommended intervention actions such as sheltering and evacuation are based on the measurement of the external dose rate. Basic protective actions against hot particles are presumably appropriate in almost all practical situations. However, the problem that highly active particles may be present in the air although the external dose rate is below the recommended operative action level (for example, the recommended external dose rate limit for sheltering is 100 (iSv h⁻¹) is not only theoretical. The management of this situation requires special knowledge and equipment that are not necessarily available to the staff operating in field conditions. The possibility that highly active particles may serve as an additional health threat must be evaluated case by case based on expert judgement by the authorities familiar with radiation protection issues.” (Pollanen, R., STUK, pp 53, 54, as cited above.)

And so it is that the ICRP draft document confuses me very much. It seems to be in contradiction of accepted Australian standards and seems years behind the level of insight possessed and explained by Pollanen. Of course, it is possible for Australia to water down its procedures in order to follow ICRP dictates, and no doubt the Australian government will happily comply with the ICRP. I note that from 1952 until the 1960s the Australian and British government fully complied with the chair of the ICRP at that time. Sir Ernest Rock Carling served as Chair of the ICRP from 1950 to 1956. Learning from history is very important, I think.

I note the following from the ICRP draft: “For protection of responders after the urgent emergency response, the reference level 115 should not exceed 20 mSv per year. For people living in long-term contaminated areas following the emergency response, the reference level should be selected within or below the Commission’s recommended band of 1–20 mSv for existing exposure situations, taking into account the actual distribution of doses in the

population and the tolerability of risk for the long-lasting existing exposure situations, and there is generally no need for the reference level to exceed 10 mSv per year. The objective of optimisation of 121 protection is a progressive reduction in exposure to levels on the order of 1 mSv per year.” (ICRP draft, page 6). This is strange and unacceptable to me and my companions in Australia.

Is this stuff the best you can do? At the moment the Australian government is holding an inquiry into introducing nuclear power to Australia.

Given the viable competition to NPPs of any type down here, I will strongly urge Australian politicians to reject the science of ICRP. However, thanks very much for your help.

Paul Langley