

2 April 2003

Ms Sylvia Kidziak AM
Chairperson
Radiation Health & Safety Advisory Council
ARPANSA
619 Lower Plenty Road
YALLAMBIE VIC 3085

Dear Ms Kidziak

Council Advice on Precautionary Approaches in Radiation Protection

Thank you for your providing Council's advice on Precautionary Approaches in Radiation Protection. I note the discussion contained in the paper and the recommendations made. The purpose of this letter is to outline my response and to indicate the actions that I propose.

First, I agree with Council's observation that, in the case of ionizing radiation, the principle of optimization of protection (formerly called the ALARA principle) is consistent with the application of the precautionary principle. Optimization of protection, under one name or another, has been a key principle of radiation protection policy and practice for over twenty years, both at the international level (ICRP Publication 26, 1977) and within Australia (NHMRC recommended radiation protection standards, 1981). It predates the precautionary principle in its modern formulation, which has evolved in an environmental protection context, but it has a similar character. That is, in the absence of epidemiological proof that low doses of ionizing radiation are harmful, the assumption is nevertheless made for protection purposes that risk is proportional to dose without threshold. One reason for adopting this assumption is that it is known that a single ionizing photon may produce a physical change in an atom by ionization, and that this could result in cell damage and the possibility of carcinogenesis. That is, a possible mechanism for harm to health can be identified, even though evidence of harm at low levels of dose cannot be proven. This cautious approach implies that unnecessary exposure should be avoided. As you know, the principle of optimization of protection is an essential component of the current Australian recommendations (*Radiation Protection Series* No.1).

Second, I support Council's remarks concerning the precautionary principle and non-ionizing radiation. For non-ionizing radiation, the case for caution may be less strong than for ionizing radiation in the sense that mechanisms for biological effects below the recommended limits have not been established. There is no direct counterpart to atomic ionization; if there is a health effect at levels below the limits, it has yet to be identified with scientific rigour either at the microscopic or macroscopic level. Nonetheless, in the spirit of the precautionary principle, it is justifiable to avoid unnecessary exposure where this can reasonably be achieved. Current Australian recommendations for exposure to radiofrequency fields (*Radiation Protection Series* No.3) reflect this approach.

With regard to Council's recommendations, I shall take steps to ensure that precautionary principle considerations continue to inform the standards setting process in Australia. Protection of the environment from possible harmful effects of radiation, particularly species other than humans, is an emerging international endeavour and has been discussed by Council at recent meetings, and I will ask ARPANSA staff to keep Council briefed on this issue. Further, these matters will have a bearing on ARPANSA policy on permissible discharges of radionuclides from regulated activities. I intend to bring ARPANSA's thinking on this to Council's attention in due course.

Finally, if you agree, I propose to place the Council's advice and this reply on the ARPANSA website.

Yours sincerely

John Loy
CEO of ARPANSA