

7. REVIEW OF THE NEW ZEALAND RADIATION PROTECTION LEGISLATION

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The purpose of this report is to suggest some submissions that could be made by the Council to the National Radiation Laboratory on the above discussion document. The closing date is 15 March 2003.

CONTEXT

The National Radiation Laboratory, which is a unit within the Public Health Directorate of the Ministry of Health, has prepared the discussion document. The full document is available on the Ministry of Health's web site: <http://www.moh.govt.nz>.

The purpose of the review is largely due to the fact that radiation protection legislation is based on an Act originally passed in 1949 with only small changes made since that time. Since then there have been large changes in the way radiation sources are used in New Zealand and changes in the ways radiation safety is regulated on an international basis. There are matters to do with medical, as well as industrial use, in which controls are not in accordance with generally accepted international regulatory systems.

As pointed out in the report the Ministry is considering four options in this review:

1. Continue with the present legislation, being aware of the inadequacies and potential problems.
2. Attempt to rectify some of the deficiencies by amending the regulations but not changing the Act.
3. Initiate a fundamental review of radiation protection and re-design the regulatory system from first principles.
4. Draft new legislation based upon the accepted international model of best practice.

It is stated that the Ministry preference is that the last option be developed.

THE DISCUSSION DOCUMENT

It is pointed out that there are two categories of radiation that may cause health effects, ionising and non-ionising.

The first category is high-energy radiation and includes x-rays, alpha particles, beta particles, and gamma rays, which cause chemical and molecular changes to interacting bodies. Radioactive materials produce this type of radiation as they decay, the most popularly well know sources being uranium and plutonium for example, and the second type is that produced electrically such as x-rays. The latter type only is emitted when the appliance is turned on. The health effects from excessive exposure have been well researched over a very long period. At higher levels of exposure, such as could occur following a nuclear explosion or an accident in a nuclear powered plant for example, symptoms of 'radiation sickness' can occur. Such exposures are rare. At lower levels of exposure effects are usually not measurable as we are all exposed to natural ionising radiation all the time. The Council has one policy regarding its opposition to nuclear weapons and visits to New Zealand by nuclear powered ships.

The second category is non-ionising radiation, which is electromagnetic energy and is associated with visible light, ultraviolet light, lasers, electromagnetic fields, and radio waves for example. This does not cause chemical changes through ionisation but can produce heating and electrical effects. The health effects have been researched over a considerable period and generally thresholds for direct injury effects are well established. The paper does, however, acknowledge that some research suggests that there may be effects below the threshold for thermal effects but there is still considerable uncertainty in this matter. The Council has policies and rules under the City Plan relating to one source of non-ionising radiation cell phone base and radio transmitting towers.

Most ionising radiation sources are used in specialised medical or industrial circumstances and protection of the general public has been satisfactory. In the home smoke alarms are probably the only source of such but at such a low level as to be not of a concern. The major source of exposure to ionising radiation from human made sources by the general public is likely to be medical interventions such as x-rays but the annual exposure from man made sources is only about 20 per cent of total annual exposure. The remainder is from natural background radiation such as cosmic radiation, from naturally occurring radioactive materials in rocks, soil, building materials, and ingestion from naturally occurring radioactive materials in food.

Non-ionising radiation can occur from a wider range of domestically based products such as cell phones, microwave ovens, televisions, and some other electrical equipment. It is also sourced from radio and television transmitters and high voltage electrical distribution systems. Natural sources also contribute to exposures to non-ionising radiation the most significant being ultraviolet radiation.

THE PROPOSAL

The significant matters on which the Ministry seeks comments include the following:

- Currently there are restrictions on the time that persons using radiation dangerously may be prosecuted under the current Act and due to the licensing procedures individuals rather than the equipment owning corporations are responsible for safety measures. There are no adequate provisions for taking emergency powers in cases when conditions may become dangerous. Combined with the controls being in the hands of licences issued to individual operators this is perceived to be unsatisfactory.
- Whether New Zealand has an obligation to implement standards that are recommended by international bodies to which we belong. These are defined as including the World Health Organisation and other such bodies. There is also a question as to whether New Zealand should develop controls and standards that harmonise with Australia.
- A number of types of regulatory approaches are discussed to meet the objectives that planned exposures to radiation are at a suitably low level and the risk of an accident resulting in greater exposure than this is also low. They discuss 'command and control'; 'performance-based'; 'risk management'; types and also 'deregulation'. The preference of the Ministry is for the 'command and control' approach in which responsibility for compliance rests with the operator and owner. Their preference is also for the regulatory authority to be a specialised unit within or attached to the Ministry of Health.
- Whether a new Act should be introduced to be based on international models of best practice, as opposed to merely altering regulations, or even taking no action, is a final significant question.

CONCLUSIONS

It is suggested that this Council should make submissions on a number of matters raised through the discussion document. It seems to be sensible that responsibility for safety controls rests with both individual operators and the owners of the equipment, that standards adopted reflect those adopted internationally by responsible scientific bodies, and that regulations be based on these through a 'prescriptive' approach. Given the age of the current legislation and the defects that are apparent it is considered a new Act should be introduced with the specialised regulatory authority based with, or under the control of, the Ministry of Health.

Recommendation: That the Council make submissions on the Review of the New Zealand Radiation Protection Legislation discussion document as outlined in the attached submission.

(Note: The Chairman declared a conflict of interest in this clause and retired from the discussion and voting thereon, following which the Deputy Chairman temporarily assumed the chair.)