House of Representatives Standing Committee on Industry and Resources
The Strategic Importance of Australia's Uranium Resources

Comments on the risks from low levels of ionising radiation by:

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1. Policies for radiation protection are mainly based upon the linear no-threshold (LNT) model, which assumes direct linear extrapolation of the harmful consequences of high doses of radiation to those at low doses. However, the LNT model does not accord with effects on human health, since low doses of radiation protect against the harmful health effects observed at high doses. This positive outcome, which includes fewer cancers than expected under the LNT model, is known as radiation hormesis.

2. Hormesis applies universally to physical and chemical environmental agents, including sun-light, alcohol consumption, and ionising and UV radiation. Radiation hormesis is therefore a specific expectation based upon a general phenomenon across environments.

3. Furthermore, solid scientific evidence for radiation hormesis extends back for many years. In March 2005, the French Academy of Sciences and National Academy of Medicine issued a comprehensive report based upon extensive human and experimental data published over many decades. This clearly shows that the LNT model cannot be validly used for assessing risks to populations at very low doses of radiation. In fact, the report finds that the LNT model overstates the harmful effects of low dose radiation, and stresses the importance of this conclusion for radiation protection.

4. Background radiation, to which everyone is continuously exposed in Australia, is around two milliSieverts per annum. In contrast, in geological outliers elsewhere in the world, background exposures can be over 50 times higher. Hormetic affects of ionising radiation extend over this elongated range, although additional demographic research would help to quantify this conclusion.

5. Peaceful uses of radiation are therefore unlikely to be deleterious. While I do not have detailed knowledge of uranium mining and handling processes, radiation exposures are apparently towards the lower end of the hormetic range, implying no consequent biological or health reasons against the development of Australia's uranium resources.

6. This low-risk, or phantom-risk, situation should be viewed in the light of the progressive increase in greenhouse gases especially carbon dioxide, with their potential for climatic change and deleterious biological and health consequences. Power generation from uranium resources implies little risk from such greenhouse gases. Uranium resources should therefore be considered in the same group as other low to minimal greenhouse-gas methods of power generation.

7. A review paper of mine "Radiation Phobia and Phantom Risks" published in Quadrant (December, 2004) is attached. The evidence for the inapplicable LNT model for low exposures to ionising radiation is presented in evolutionary terms, implying the universal expectation of radiation hormesis. In addition, I have published technical papers on these topics since 1989.

Conclusion

8. The lack of health consequences of low levels of ionising radiation is consistent with the development of Australia's Uranium resources. A step towards life in the approaching "carbon-constrained world" will thereby be taken.