



To: Inquiry into nuclear non-proliferation and disarmament.

From: Dr M Campbell, |

By halting all mining of radionuclides, Australia could play a major role in halting nuclear proliferation. Radionuclides emit  $\alpha$ ,  $\beta$  and  $\gamma$  rays which all ionise molecules that would otherwise remain stable. They are particularly dangerous to children whose cells are still dividing at increased levels until their populations stabilise at maturity. Cancer rates have increased since the discovery of radioactivity in the 1890s and some of these are due to the bomb tests in the 40s, 50s and 60s. Products from these still add to higher levels of radioactivity than existed before that time.

Every alpha particle produces as many as 140,000 ionising collisions along its track. Every gram of uranium 238 produces 12,400 alpha particles per second and it has an enormous half-life of 4.5B years, so that most other sources produce more. Its danger is minimised - it is most stable - when left alone.

Before 1940 plutonium was unknown but since the 1940s this radionuclide, often described as the most deadly substance on earth, has been accumulating. As it does so, the nuclear danger also does. Its rate of decay is slow - we can't unmake it once we've made it. We should stop making it. Any national being would see that as self-evident. Any national being would leave all radionuclides untapped in the hands of nature which always moves to a position that maximises stability.