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New Zealand Government should demand International Atomic Energy Agency reform—to help phase out nuclear power

International attention has been riveted on the impact of the 11 March earthquake and tsunami on Japan's Fukushima nuclear reactors. Short and long-term health effects of radioactive leakage from reactors and spent fuel pools,[1–3] will doubtless be studied in the coming years and decades. This serves to remind us in general that the way we obtain our energy is a global public health issue, and in particular that nuclear power is attended by many serious and unique health and environmental risks. It also reminds us about flawed decision-making processes that have allowed reactors to be built in areas where a major tsunami had occurred in the past[4] and similarly in high-risk areas for earthquakes in other parts of the world.[5]

The risk of irradiation from accidents to reactors and to nuclear waste storage arrangements includes both massive acute radiation near the site and lower-level very widespread chronic radiation. In particular, the Chernobyl reactor accident has increased the risk of thyroid cancer.[6]

There is now evidence that Fukushima radioactive particles have spread to other parts of the Northern Hemisphere, as well as having entered the food chain in local agricultural areas in Japan.[1,2] Whatever radiation health impacts eventuate, the psychosocial impacts[7] to the surrounding population and even other parts of Japan are likely to be considerable.

Selected other problems of nuclear power include the following:

- The unresolved long-term waste storage in nearly all countries with such reactors.
- The potential for nuclear reactors to be terrorist targets or targets in war. The risk of the latter may increase with conflict arising from political change (especially in autocracies) and due to disruption to societies from climate change.[8,9]
- This energy source involves enormous capital investments and there are usually various types of government subsidies (e.g. loan guarantees, research and development support and special government support for insurance coverage). Post-Fukushima demands for increased safety provisions will probably make it even less economically viable.
- Investment in nuclear power also diverts resources away from truly sustainable energy resource development, thus worsening the very serious global health impact of climate change. Furthermore, a current surge of planning to construct more nuclear reactors (at least pre-Fukushima) would further increase the dangerous carbon load of the atmosphere. The often decades-long construction of a nuclear reactor, using enormous quantities of concrete, is heavily carbon-intensive.

- Even when operating normally, there may be an association between proximity to a nuclear reactor and increased childhood cancer risk (e.g., in Germany[10]). But this association, which is complex and difficult to study,[11] has not been found in some other studies (e.g. in the UK[12]).

But by far the most serious problem with nuclear power (in our view) is that this technology can facilitate the subsequent acquisition of nuclear weapons. This appears to have occurred for India, Pakistan, North Korea and probably also Israel.[13]

Some of the other countries with nuclear power could potentially move in the same direction under certain circumstances: "the existing enrichment capacity of countries such as Brazil and Japan makes them virtual weapons states—they could arm in months if they so wished".[14] The potentially devastating effects of the use of even a small proportion of the global arsenal of nuclear weapons is well known.

Less well-known is the recently modelled 'nuclear darkness/famine effect' in which dust from a limited regional nuclear war could spread to the atmosphere above New Zealand in only 11 days after the attacks.[15] The modelling suggests that this dust would reduce the surface air temperature in New Zealand by 2 degrees Celsius in years one to two and reduce the length of the growing season in parts of the country.[16–18] The impact on Northern Hemisphere countries would be very much greater.

The simple conclusion is that nuclear power has been an expensive technological blind alley. It has been well tried and found to pose unacceptable direct and indirect (nuclear weapons) hazards to long-term human health and well-being.

The International Atomic Energy Agency (IAEA) is an important promoter of nuclear power. Its Department of Energy assists countries in setting up nuclear power programmes.[19] This it does alongside its other functions of monitoring the non-proliferation of nuclear weapons and standards of nuclear safety in existing reactors, and promotion of medical uses of radioactive materials. These functions are in implicit conflict of interest.

Those interested in the promotion of nuclear power will not welcome, for example, dissemination of data on negative health impacts of its use. This may be why the IAEA appears to have caused the World Health Organization (WHO) to surrender its right to research and publicise data on ionising radiation, in a confidential agreement made in 1959.[20] It has led to lack of public trust in both organisations on this issue.

Given this background, New Zealand as a member of the IAEA and a responsible member of the international community, should now demand urgent reform of this body. In particular it should demand phasing out the IAEA's Department of Energy (nuclear power) and strengthening its other functions. It could work to achieve this with other like-minded non-nuclear countries and those such as Germany, which is now reaffirming its commitment to a nuclear power phase-out.

Fortunately, this is an area in which New Zealand has credibility with long-standing nuclear-free legislation,[21] a track record in promoting nuclear disarmament,[22] and a relatively high level of energy from renewable energy (at the top of the OECD with Norway and Iceland).

Joanna Santa Barbara, Nick Wilson, Andrew Winnington
International Physicians for the Prevention of Nuclear War (IPPNW), New Zealand Branch
Joanna.SantaBarbara@sustainablevillages.co.nz

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