

A RESPONSE TO THE UDP REPORT - RISKS FOR HEALTH AND SAFETY FROM URANIUM DEVELOPMENT

A. Miners and Mill Workers.

The carcinogenic risk of exposure to radon and alpha radiation has been known and studied for decades. It began with the Czechoslovakian miners of feldspar in 1948, then became apparent with uranium miners in Germany, and then in France. ⁽¹⁾

In 1910 Marie and Pierre Curie had discovered the radioactive qualities of radium and polonium in pitchblende. Later in Canada the mining authorities knew of the dangers, but did not tell their workers. In Port Radium, NWT, Satu-Dene workers carried sacks of uranium ore on their backs, unprotected, as they loaded barges for transport. The National Film Board of Canada (NFB) film, "Village of Widows," reveals that over half of the workers died with lung cancer.

From 1930 to 1982 some 17,660 miners and millworkers laboured for Eldorado Nuclear in the region of Uranium City and Beaverlodge in northern Saskatchewan. Before the Mine Safety Act of 1966 the standards for radiation exposure were very few. The epidemiologist, Dr. Geoffrey Howe, found that those workers had a 30% higher rate of cancer than ordinary citizens. Of the 17,660, some 5,960 had died of lung cancer by 2006. ⁽²⁾

Next, several epidemiological health studies were done on 21,346 uranium miners at Elliott Lake and Bancroft, Ontario from 1932 until 1967. The studies found that the miners were 3 times more at risk for cancer than the average citizen. ⁽³⁾

The mantra of the Uranium Industry was that "low radiation doses mean low risk." However, the flagship of the industry, Atomic Energy of Canada Ltd., had always claimed its workers were carefully monitored and kept at low radiation exposures. But Johns Hopkins University studied 13,570 employees of AECL for 31 years, and found that 948, or 9.8% of the employees, had died of cancer. Oops! Would not that raise a question in your mind? ⁽⁴⁾ A study by Finkelstein and Kusiak found that low doses of radiation caused more cases of lung cancer than strong doses! More questions! ⁽⁵⁾

Fortunately, the Uranium Industry did continue working to keep radiation doses low for its workers. It installed leaded shields at key points, enhanced ventilation of mine spaces, kept elaborate radiation monitors in place, used more robotic methods of mining ore, and transported ore in the form of a slurry through steel pipes to special trucks. These were helpful measures. The mills, however, are still dangerous since the ore is ground into fine particles thus releasing all the alpha particles and radon in it.

Nevertheless, continuous research keeps raising disconcerting problems. The Petkau Response showed that radiation did not work as a linear phenomenon, but as a "supralinear" function. Dr. Abraham Petkau, working at the Whiteshell Research Station at Pinawa, Manitoba in 1972, found that cellular responses to radiation rise sharply from zero dose, but then flatten out at a higher dose. The industry mantra involved a "linear theory," where "low dose means low risk." Sounds reasonable does it not?

But scientists are finding a different phenomena, where low doses also cause harm, but increasing doses do less harm in a "supra-linear" theory, which is practically the opposite of the mantra! It seems high doses of radiation kill cells, which the body tries to replace. Low doses trigger damage to cells and chromosomes, but they moulder and linger, until a few years later they develop into cancerous lesions. The Uranium Corporations do not tell their workers about this "reverse" theory, where the low doses are also very dangerous! (6)

In 1997 Saskatchewan Uranium Miners Cohort (SUMC) was set up to study the health and mortality rates of 12,000 workers from 6 different recent mines in northern Saskatchewan. The Canadian Nuclear Safety Commission (CNSC) asked the epidemiologist a trick question. Could he find evidence that radiation could cause 5 or 10 times greater risk than current risk models were showing? He did not think that "statistical studies" could clarify or conclude such a finding. The CNSC, on this pretext, cancelled the Study, although loads of data are available for epidemiological research. The Industry was ecstatic, and the Press went berserk, printing headlines like "Radiation is Safe." This event was a travesty! (7)

In 2005, a sub-committee of the National Academy of Science, the Biological Effects of Ionizing Radiation Commission (BEIR VII), a group of top scientists, stated that the scientific research base shows there is no low threshold of radiation exposure which is safe. (8)

The International Commission on Radiation Protection (ICRP) sets what are deemed as "permissible doses" for uranium workers. The only problem is that it has set them too high, and the workers are

exposed to more dangerous radiation risk than they realize. The CNSC, the Industry, the Provincial Government, and the Federal Government all follow and depend upon these ICRP guidelines.

The European Commission on Radiation risk (ECRR) contest the guidelines of the ICRP. The ECRR is composed of 46 scientists from several disciplines who issued a major report in 2003. They contend the methodology of the ICRP is outmoded and defective because it was originated even before DNA was discovered. Its focus, based mainly on physics, is too narrow, neglecting other disciplines like radiology, epidemiology, genetics, and health specialties. The original scientists of the ICRP were physicists, who used statistics regarding gamma radiation from follow up studies of the effects of the Hiroshima and Nagasaki explosions.

The ICRP system "averages" the radiation effects over the whole body mass. Its risk estimates are based on external and not enough on internal radiation. It does not fully account for the vagaries of alpha radiation, where high charged particles fly off spontaneously and randomly from the source. As the ECRR claims, if an alpha molecule floats down the windpipe of a miner, and hits a cell in the lung, the damage is done! It is not a matter of "averaging" the impact over the whole body. The ECRR also indicated that low doses increased the level of genetic mutation in cells which are hit.

The ICRP has set the allowable limit of radiation at 20 millisieverts, averaged over 5 years, and a maximum dose of 9.4 mSv per year, with 1.0 mSv for the general public. The ECRR recommends 0.1 mSv, and 5.0 mSv for nuclear workers. (9)

The main reason the Uranium Industry survives today is that the "delayed action" of radiation damage takes 15-20 years to develop into cancer. By that time, many of the owners have closed up shop and moved away, and a percentage of the workers are left with a cancer in their lungs!

B. Children, Mothers, Fathers and the Effects of Radiation

In 1957 Dr. Alice Stewart demonstrated that there was an increase of cancer in babies where the mother had received abdominal X-rays during pregnancy. She later established that even a single diagnostic X-ray was enough to double the risk of early cancer. By the 1970's medical bodies recommended that pregnant women should not be X-rayed. (10)

It was found that children, with rapidly replicating cells, are more sensitive to radiation damage. (11) Apparently, radium is attracted to bone. Hence, in the United Kingdom, it was found that strontium, a cancer producing chemical, was discovered in larger quantities in the teeth of children living near to nuclear reactors. (12)

Strontium-90 is a man-made form of radiation, and so comes from nuclear reactors and from nuclear bomb testing, which scatters radiation in the air currents. The strontium-90 damages the bone marrow's ability to fight cancer and infectious diseases, hence resulting in a greater number of leukemia cases in children. Many studies were done in the United Kingdom, which spurred other countries also to research strontium-90 in children's teeth near nuclear reactors. (See the articles listed by Google)

The USA did some of its own research studies and found that counties within 40 miles of 6 nuclear power plants, had higher levels of strontium-90 ---sometimes 31% to 54% more than other counties. This, in turn, led to higher incidences of child leukemia. (13) In Port Hope, Ontario, where 35 million cubic metres of radioactive soil and waste has been dispersed from around the Cameco Conversion Facility, the children have experienced elevated cases of disease. "The people of Port Hope are still waiting for the health studies commitment to be honoured. Independent statistical analysis of two preliminary federal studies released several years ago has shown elevated rates in Port Hope of incidence and mortality from such diseases as lung cancer, brain cancer, colon cancer, lip, nose and pharyngeal cancer, non-Hodgkinsons lymphoma, and circulating disease." (14)

It was also found that the water in Port Hope had arsenic levels 11 times the acceptable rate for Ontario, and a contamination of the water with uranium 50 times higher than the Provincial Water Quality Objectives.

In his 1982 book, Killing Our Own, Harvey Wasserman documents stories of the diseases and illnesses among children, adults, and farm animals exposed to radiation downwind from the Three Mile Island nuclear reactor after its partial meltdown. (15)

Recently, a 38 page study, concerning the health implications of the nuclear industry has been released by two Physicians writing for the Environmental Health Committee, the Ontario College of Family

Physicians. After a lengthy review they conclude: ". . . there are major health effects at every stage of the nuclear fuel chain . . . A number of studies undertaken in the past two decades have shown worrisome links between low level exposure to radiation and some serious illnesses, including childhood leukemia." (16) They review the studies of increased leukemia in proximity to nuclear reactors, beginning with COMARE (Committee on Medical Aspects of Radiation in the Environment) begun in 1985 by the U.K. government, with 11 subsequent studies concerning the region of the famous Sellafield Reactor.

The authors also review the KiKK study in northern Germany, very carefully executed over 23 years (1980—2003), and also peer reviewed. Those scientists found increased leukemia in children "statistically significant in the 0-5 and 5-10 km zones, and continued as a trend out to 50 km from the nearest nuclear power plant." (17)

It has long been known that ionizing radiation can damage DNA germ cells—both eggs and sperm, and thus passed on to future generations leading to possible mutations, malformations, and genetic disease. Surprisingly, the Ontario physicians made reference to two studies which examined the radiation exposure of fathers, especially miners, before the conception of their children suffering from leukemia, Down's syndrome, and congenital anomalies. One study had been done in 1990 by Gardner et al, and a second one in Ontario in 1997 by Green et al. (18)

In 2005. Dr. Helen Caldicott of Australia stated: "It takes a single mutation in a single cell to kill you. [The most common plutonium isotope] has a half-life of 24,400 years. Every male in the Northern Hemisphere has a small load of plutonium in his gonads. What this means to future generations God only knows—and we're not the only species with testicles. What we are doing is degrading evolution, and not many people understand that." (19)

Summary

The Report of the Uranium Development Partnership gives very little attention to the health and safety risks of uranium mining, and nuclear reactors. It states: "A strong and effective licensing and environmental assessment process is paramount to ensure the safety of workers and the public, as well as to protect the public." This is repeated at least 3 times. (pp. 4,27,37) It is a bland hope with no specifics to support it.

Again, the Report states: "Public exposure levels from nuclear power are significantly below naturally occurring levels and come with no known health risks." (p.95) In another place it states: "Exposure to ionizing radiation is a risk facing nuclear power workers; . . . numerous studies have shown that radiation exposure for workers in nuclear power is near naturally occurring levels and presents no health risks." (p. 96) Such statements are in direct contradiction to many other scientific studies, and a huge volume of radiation and genetic studies.

This Report cares nothing for the health and safety of workers, women, and children. It flies in the face of hundreds of other documents. It is chiefly a "business plan on steroids," focused on business and profits. It is incomplete, unbalanced, and unscientific.

It needs to be categorically rejected!

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END NOTES

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