

Deadly assumptions: Radiation and Risk

The number of future cancer deaths as a consequence of the disaster in Chernobyl has been adjusted downward from tens/ hundreds of thousands to 4000, but even this estimate may be way too high. It is quite likely that the bookkeepers of Russian health will one day have to register a cancer *deficit* among the people who were irradiated in 1986. That many people in that area do NOT have cancer as a result of their extra dosis of radiation.

That is the view of prof. dr. Zbigniew Jaworowski, from Poland, long time member of the United Nations Scientific Commission on the Effects of Atomic Radiation (Unscar) and author of hundreds of studies in the peer reviewed radiological literature. In 1986 he was responsible for the distribution of supplemental Iodine to 18 million Poles (to protect their thyroid glands), but afterwards he considers those and other measures a complete waste of time and money. Only 134 people around the reactor did receive really high radiation doses (28 of them died as a result), the rest of the population received an extra dose that was lower than normal background radiation (some of them were evacuated, to a place where natural background radiation was substantially higher). The 4000 future cancer cases, Jaworowski tells me over the phone, 'are just a theoretical construction. We will never see them'. One reason for this is that epidemiologists lack the instruments to identify these people in the group of about 5,000,000 people in areas contaminated in 1986 that received extra radiation, but more important is that these cancer deaths will never occur. Or better: no doubt some of these people will develop cancer but that will have nothing to do with the radiation they received from the exploding power plant.

The massive (many say: hysteric) reaction to the explosion in Chernobyl has its roots in the 1950s when radiation scientists concluded that *any* amount of radiation could be dangerous and thus should be avoided. They had their data from the consequences of the nuclear bombs that fell on Hiroshima and Nagasaki. They had calculated the doses that the people in different circles around Ground Zero had received and correlated those with statistics of disease and death. A straight line emerged, which seemed to confirm a dose effect relationship: the more radiation one receives the higher the chance of death!

Not completely though: some people had received an amount of radiation that was about 50-100 times the normal, natural, background radiation that the rest of the Japanese receive (about 2.5 milliSieverts/year). In this group of so called Habakusha's (bomb survivors) they could not find enough cancer deaths to create a decent statistic that showed that radiation is carcinogenic even at these low doses. So the straight line of dose and effect suddenly stopped. The graphic should have read: *No more data available* but instead the scientists simply *assumed* that the dose-effect relationship would continue: any amount of radiation is dangerous. There is no level below which radiation is safe (a threshold) it was claimed, and they called it the LNT-hypothesis for Linear No Threshold. So short after the devastating explosions of the two bombs this may be understandable, but even at the time many scientists protested: a scientist bases work on data, not on assumptions, they said, but they were ignored. The LNT-hypothesis still has no scientific basis, but it is nevertheless the rule and the major cause of the disaster that Chernobyl ultimately became.

In the past half century it became clear that there are many places on earth where background radiation is 50, 100 or more times higher as the sea level average of 2.5 milliSievert. Parts of Iran and India and China, the beaches of Brazil, parts of Central Europe, the southwest of France, Norway. In some of these places epidemiological studies were started and they produced a remarkably consistent picture: the people there have either the same or a slightly lower chance of cancer compared to their less irradiated countrymen. They live just as long or a little bit longer. Studies among radiologists and workers in nuclear factories gave similar results: a little extra radiation is either harmless or beneficial. And the same goes for studies of accidental exposure: high levels are dangerous, lower levels are harmless or are even beneficial. Researcher Sohei

Kondo found in Hiroshima and Nagasaki that some people have a higher life expectancy after the bomb and a lower chance of cancer. And in Chernobyl it is shown again: the thousands of *liquidators* – the firemen and emergency workers - have a similar chance of cancer as the average Russian population (somewhat lower, though not significant). This is why Jaworowski is convinced that the 4000 radiation induced cancer victims will never materialize in Chernobyl.

The authors of the report of the Chernobyl Forum make much of the sociological and psychological problems of the 350.000 evacuated people in the area. The evacuation has disrupted their lives, they have no knowledge of radiation, are fatalistic, have adopted 'poverty lifestyles' (e.g. alcoholism). These problems are probably very real but the focus should not be so much on people who have no clue about radiation, but on the scientists who started the scare in the first place, those who are responsible for the continuation of the LNT-hypothesis. If you are told: 'any amount' of radiation is dangerous, then it is not illogical to be scared when you are in the vicinity of 'any amount' of radiation.

The whole huge rescue operation, the evacuations, everything that happened in the past 20 years was inspired by the LNT-hypothesis, by an *assumption* that low levels of radiation are dangerous. Many many billions were spent. Belarussia and the Ukraine together claim that they have lost a total of 400 billion dollars. These countries may not be known for accuratesse, but these numbers give an indication of the enormous sums involved (the international community also contributed considerably). It is clear now that many of these billions are wasted, no extra lives were saved with them.

Research has shown that the average amount of money a hospital in the US spends to save a life is about 40.000 dollars. That implies that if you waste a billion you do not have enough money to keep more then 25.000 people alive. These are the real ethics of radiation protection (or protection against any other risk). If you spent your money on small risks you have nothing left for the big risks. And that is exactly what radiation scientists have forced us to. In the USA saving a life by implementation of regulations based on LNT costs about 2.5 billion dollar each.

It is important that the scientists who support the LNT-hypothesis are confronted with the darker side of their views, since the next Chernobyl like disaster is waiting to happen. Not an explosion of a nuclear power plant, but another wave of useless measures to protect us against the dangers of radiation. Several governments in Europe are now preparing measures to ventilate houses where the concentrations of the natural radioactive gas radon are too high. The dangers are exaggerated: an Austrian scientist found that the LNT-based prognosis of radon deaths in his country exceeds the real numbers of total mortality of all causes. Other researchers have shown that many so called radon deaths are in fact tobacco-deaths. American researcher Bernard Cohen has shown that a higher level of radon is correlated with a lower chance on cancer. Meanwhile many thousands of people in Germany, Poland, Czechia and Japan visit radon spas to breath radioactive air for their health (and these benefits are scientifically confirmed). It is allready known that these measures to ventilate homes will suck lots of money away from more worthy causes and the number of lives saved will be negligible.

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