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Radiological risk in the global burden of disease

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Abstract- The contribution of radioactivity to the overall burden of disease has rarely been put in context of overall pollution of our environment, even though it has got high public interest as stand-alone problem. Indeed, radioactive pollution is not even mentioned in World health statistics 2020. Is it less important for health than in public policies? There is no general accepted common frame of reference, which would allow comparing risks of none-radioactive and radioactive pollutants and sharing methods for risk management. Annually, the WHO compares the impact of chemotoxic risk with those of many other risk factors, using the global burden of diseases and the disability adjusted loss of life years (DALY), a concept that has only recently been applied to radioactive contamination by Japanese researchers. Despite some effort for risk comparison, there seems to be a silent agreement between the experts from IAEA, WHO, OECD-NEA, ICRP and many national bodies as well as antinuclear civil society groups, in the field of assessing the health impact of radiotoxicity to treat radioactivity apart. Maybe, one of the reasons is that on global level, the largest impact of radiation stems from natural radioactivity. Taking for example the public debate on potential risks from future radioactive waste disposal sites. Compared to the risk from natural radiation, the risk contribution to future generations from a radioactive waste disposal site is expected to be thousand to million times lower. And this risk is not for the next 10000 yrs but only for the time very much beyond, close to the age of the homo sapiens. Expressed in DALY, the number of cancers cases formally attributable to a life long exposure situation by natural radiation of 1 mSv corresponds for example for the japeze population to a reduction of life expectancy of about 1 to 1.5 month for man or woman. Hence, the impact of a radioactive waste disposal site on potential reduction of life expency of future generations will be well below 1 day. Probably, life expectancy is even increased by geological disposal, as it reduces the risk stemming from surface storage sites, which are difficult to be controlled over the time of many generations. The ICRP shall help understanding radiological risks in the overall context of other risks, the society is taking everyday.

Keywords: radiological risk; geological disposal; life expectancy; global burden of disease