

A prospective view of radioprotection

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Abstract

If we exclude the specific case of medical radioprotection and workers radioprotection, the main challenge of tomorrow radioprotection is the protection of usual people faced to a possible increase of ambient contamination, either as a consequence of usual releases of industry or as a consequence of sporadic accidents.

From the view points of regulators and practitioners of radioprotection, we have to optimize today researches and studies, to optimize protection investments and to prepare future rules according to what could be the possible concerns of radioprotection in a near future.

Clearly, when dealing with nuclear energy, a perspective of 30 years is not a very far one. A nuclear plant built today will still be in operation 30 years from now. But 30 years is a fairly long time compared to evolutions of science. For example, DNA was discovered in 1953 and gene engineering began seriously in the years 70s. There is no doubt that the evolution speed will not decrease and that the scientific situation will be quite different within 30 years. This could have many practical consequences. One is that the risk associated to radioactive stress could be better estimated, another is that precursors of a disease attributable to radioactivity will certainly be detected earlier and will allow cure to begin earlier. It is quite likely also that our ability to stimulate the natural defenses of organisms will improve. In an even more futuristic approach, the use of nanoengines or the use of highly selective killer processes at the cell level seems quite possible.

Radioprotection will not only be influenced by science but also by the level of environmental threats. We have already a pretty good backward knowledge but, if we consider that the real beginning of industrial nuclear age was in the seventies, within 30 years, we will have more than 70 years of retrospective view. That should be enough to determine if our exposure to radioactivity is really increasing. Moreover, information about death causes and diseases will be far more comprehensive than today. This will quite likely allow better assessment of the place of radioactivity as a population stressor.

It seems reasonable to think that a large range of scenarios for radioprotection is possible. One is that radioprotection will disappear as a stand alone specialty. It will be merged in ordinary protection to handle a very minor stressor that comes to the first place only in very rare and specific situations like accidents. Another scenario is that radioactive stress will continue to be considered as a small risk that could be a greater concern if other risks are more and more harnessed. It is of course impossible to be absolutely certain today but it would be wise not to take for granted that radioprotection is only a matter of regulation and increasing operational investments. The likelihood that radioprotection would evolve considerably

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in the future is high enough to justify that the ratio between R&D and industrial implementation should be more favorable to R&D.

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