International Union of Radioecology

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On marine radioecology problems at the Fukushima oceanic area (general remarks)

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The marine area concerned by the Fukushima accident leads to the dominant geographical involvement of radioecologists from at least a few leading countries: Japan itself at the western and central Pacific, the USA at the eastern and also central Pacific and France on the southern Pacific. The northern Pacific area up to the Bering Strait is, probably, a mutual area of radioecological interests for Russia, the USA and Canada.

Marine radioecologists in Japan and their very qualified scientific schools are famous from their studies of the consequences of atomic and hydrogen bombs test explosions in the Japan adjoined areas of the Pacific in the 50s. Pioneer Japanese marine radioecologits (Drs Y. Miyake, K. Saruhashi, Y. Hiyama, R. A. Ichikawa, R. Fukai, M. Shimizu and many others) and more recently Dr Y. Omomo, the last IUR 'V. Vernadsky Gold medal' Laureate, have brought their followers to international leadership within the marine radioecology community. Therefore, there is no doubt about the current great scientific competence in Japan to solve the Fukushima radioecological problems prevailing within the Japan area of the Pacific.

Quite similarly, there are highly qualified marine radioecologists in the western USA and France to adequately deal with the potential radioecological impacts in regions of the central, eastern and southern Pacific.

The situation is not as favorable, however, in relation to marine radioecological studies in the remaining regions of the north Pacific, nearby certain north Pacific countries. This should form a concern for the International Union of Radioecology to coordinate and help completing the proper coverage of all sensitive areas, including those lying relatively far away from Japan and the USA.

It is recommended then that IUR, together with leading marine radioecologists from Japan, the USA, France, Canada, Russia and other countries, should:

- Identify qualified marine radioecologists in such regions and countries
- Organize and coordinate the general programme of their involvement in research and the associated reporting in dedicated symposiums
- Promote on this basis training schools.

The methodology for ecological risk assessment of radionuclides contaminating the environment is the focus of a very active scientific community notably prompted by the current efforts of the International Commission of Radiological Protection (ICRP) dealing with the radiological protection of the environment under its Committee 5. Among emerging methods for the rapid assessments of possible long-term radiation effects by Fukushima radionuclides on marine animals and plants, it is worthwhile men-

tioning the existing collaboration between Japan and Ukraine which has yielded a radioecological model of chronic radiation effects in the biosphere[1,2].

But for this model, and more generally for any such methodology to be deployed, it is necessary first to collect wide measurement data related to the Fukushima radionuclides released in the oceanic environment, the extent of their absorption within marine organisms as well as an assessment of the absorbed dose rates.

This leads to the most urgent final recommendation: establishing a wide program of environmental data collection and measurements. Such a program requires the prior definition of a general strategy to be tackled at international level because it shall have a dual aim: solving the marine radioecological problems of course, but also ensuring the widest international learning to be gained by the radioecological community from this accident.

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[1] Polikarpov G.G. (1998). Conceptual model of responses of organisms, populations and ecosystems to all possible dose rates of ionising radiation in the environment // Radiat. Prot. Dosimetry. – Vol. 75, No 1-4 . – P. 181-185.
[2] Polikarpov G.G., Zaitsev Y.P. & Fuma S. (2004). Equi-dosimetry of deleterious factors at the level of populations and communities of aquatic organisms. Marine Ecological Journal. – Vol. 3, No 1. – P. 5-14.