

**SHORT LECTURE BY GENNADY G. POLIKARPOV
DURING RECEIVING THE
V.I. VERNADSKY IUR AWARD**

(Bergen, Norway, 18 June 2008)

It is the highest honor for me, a marine radioecologist, to be conferred the "V.I. Vernadsky IUR Award" "For the major contribution to radioecology". It is also a great privilege to receive it from the IUR governing body here in the Kingdom of Norway - the highly developed oceanic country with its unique radioecological-geographical location on our planet. I am very grateful to the Board of Council of the IUR for the unanimous decision and I am very thankful to all nominators and supporters of my candidature.

I am greatly indebted to my dear Professors: Vladimir S. Yelpat'evsky (Saratov), Boris N. Tarusov (Moscow), Nikolay W. Timofeeff-Ressovsky (the Urals), to mention a few, for all my scientific successes. For me this event is a great, pleasant and exciting unexpectedness in my professional life. All of us, radioecologists, do not wait for awards and it is really brilliant to receive them as a surprise. I was pleased to learn about such a high international recognition of my long-term contribution into the developing of my favourite marine radioecology, and into the dissemination of radioecological knowledge as well. I have been devoted to marine radioecology for more than half a century. And I have been the IUR member for more than a quarter of a century under all Presidents - from Pierre Bovard to François Brechignac as well as under all the IUR Secretaries General - from René Kirchmann, the Honorary General Secretary, to Per Strand.

There is an apt folk saying: "Pupils are an ornament to a teacher". Therefore I would like to express my sincere appreciations to all my numerous direct and by-correspondent students and followers. Undoubtedly due to them and to mutual creative scientific interactions, my image was found to be rather collective than personal. I would like to thank very warmly the scientists of the Department of radiation and chemical biology, the IBSS, N.A.S. I started to create this Department in 1956. I have grown up a pleiad of marine radioecologists as well as my talented successor Viktor N. Egorov. I continue my work as the Head Scientist in the same Department. The news about the award was applauded at the IBSS Scientific Council meeting when it was announced by Valery N. Yeremeyev, the IBSS Director and the DG of Oceanological Centre of N.A.S.

Rudolph M. Alexakhin has a special merit at the IUR because of his successful initiative to establish the V. I. Vernadsky IUR Award for radioecologists. Everything connected with the name of Vladimir I. Vernadsky – one of the most distinguished natural scientists, the teacher of my teachers, fills me with profound respect. Like many of his followers I am proud to belong to his wide international scientific school. All my life I have the honor to work at the National Academy of Sciences of Ukraine, created by its first President Vladimir I. Vernadsky on 27th November of 1918 and which is now successfully headed by

President Boris E. Paton. The 90th Jubilee of the Academy will be celebrated this year.

I remember my distant past as it was only yesterday. In 1953 I entered the postgraduate courses on biophysics at Saratov and Moscow State Universities. After graduating I was invited by Vladimir A. Vodyanitsky, the Director, to the A.O. Kovalevsky Sevastopol Biological Station, Ac. Sc. of USSR. At that time there were no marine radioecological investigations at the Black Sea. My wife Rimma started to work as a librarian at the Biological Station Scientific Library and afterwards she headed it at the IBSS. Our children Olga and Igor and grandsons Aleksey and Pavel became sevastopolites. So, I connected my scientific work with marine radioecology and with Sevastopol once and forever. In 1975-79 I also worked at the IAEA International Laboratory of Marine Radioactivity (Monaco) as the Senior Scientist (P5) - Responsible for the Section "Environmental Studies". There I collaborated fruitfully with the first-rate radio- and environment ecologists of France, Great Britain, Netherlands and the USA.

Many radioecological scientific fundamental and applied problems have been studied by us in Sevastopol. Among the main applied problems the first one was connected with the very early overseas suggestion (happily rejected) on the usage of the Black Sea depths for international dumping of nuclear industry wastes. The second applied problem was participation in radioecological advice regarding to nuclear bomb tests in the open environment. The third one – participation in international radioecological conclusions on oceanic dumping of solid nuclear wastes. The fourth one – the sharp and long-term Chernobyl radioecology. Our Department's collective monography "Radioecological Response of the Black Sea to the Chernobyl Accident", which generalizes the period since 1986 up to nowadays, is in press.

As for the main perspectives of general radioecology, which covers studies of radionuclides migration, ionising radiation effects and radiotracers usage, they are presented in the well known IUR "Statement" by François Brechignac et al. (2003). F. Ward Whicker spoke brightly and convincingly about the future of radioecology during his first IUR V.I. Vernadsky Gold medal awarding in 2005. Here are some of my considerations on scientific perspectives of radioecology related to ionising radiation effects upon ecosystems. I am sure, it is essential to continue developing and complete the general conceptual model of the effects of long-term (chronic) exposures to ionising radiation. The model covers all existing and expected dose rates and all levels of organisation of living nature (organisms, populations, communities, ecosystems and biosphere). The model is based on registration of changes in the most radiosensitive structures and functions of living units and systems. In my opinion, it is expected that the future developed model will be a useful "compass" for assessment or orientation and for long-term predictions in chronic exposure situations. It should be a practical manual for scientists, decision-makers and the general public.

It is extremely important to address the complex problem of uniting radioecology and chemoecology by comparative equi-dosimetric assessment (on the basis of Gy/y & Sv/y) of the most sensitive ecological effects caused by all kinds of contaminants. Thus we are able to extend the above-mentioned radioecological

model to include studies of effects induced by any kinds of pollutants to develop the radiochemoecological model. The promising efforts and results in this sphere having been made and obtained in very perspective researches by Shoichi Fuma et al. from the National Institute of Radiological Sciences, Japan. I have the pleasure to collaborate with such an excellent group.

Finally, every pupil knows that Demokritos proposed the famous atomic structure of the nature, but it is less known that he also created ethics as science. So he is the grandfather of two modern Great Ages: the Age of Atomic Energy (the father of which is Henry Becquerel) and the Age of Eco-ethics (the father is Otto Kinne). Atomic energy and nuclear weapons need radioecology very much and radioecology needs eco-ethics more and more. The latter supports the ecocentric principle of radiation protection of the system "Living nature and *Homo sapiens*" to prevent the growing conflict between humanity and the biosphere. Here we meet again the well-known global Vladimir I. Vernadsky's scientific position regarding the noosphere. The noosphere is the modern stage of biosphere, when humanity should be completely responsible for life of other biological species and for all anthropogenically inducing situations on our planet.

I think that the successful creative and coordinational leadership of our famous International Union of Radioecology is one of the decisive conditions in solving such gigantic problem in the foreseeable future.

Thank you all for your kind attention!