



ХРОНИКА И ИНФОРМАЦИЯ

PROF. WARD F. WHICKER'S PRESENTATION WHEN RECEIVING THE FIRST V. I. VERNADSKY GOLD MEDAL "FOR THE MAJOR CONTRIBUTION TO RADIOECOLOGY" OF THE INTERNATIONAL UNION OF RADIOECOLOGY DURING XXVIII SESSION OF THE GENERAL ASSEMBLY (NICE, FRANCE, 05.10.05)



Right to left: Prof. Ward F. Whicker, Dept. "Environmental and Radiological Health Sciences", Colorado State University, USA, and Dr. François Brechignac, the IUR General Secretary.

I'm extremely pleased and deeply honored by the receipt of the first Vernadsky Award from the International Union of Radioecology. I know there are others, some of whom are here tonight, that are at least equally deserving of it. Recognizing the greatness of the man after whom this award is named, I am truly humbled. This award is particularly gratifying, coming from the IUR, the organization that best-represents my primary field of interest. This award is also especially important to me because it comes from those who best-know my work, namely my colleagues in radioecology from all over the world. It also seems fitting that we are in France, the gracious host for this meeting, where there has long been and where there is still a very strong group of radioecologists doing cutting-edge research in the field.

I wish to thank those who nominated me, those who supported my nomination, and the Board of Council of the IUR. I also wish to thank my graduate students and close colleagues who have made my 43

years of work in radioecology so enjoyable and rewarding. These people have, I must admit, made me look smarter and more productive than I really am. I also thank my wife April, and my family, for allowing me the tremendous amount of time it required to pursue my passion for science and education. It was a labor of love for me, but at times a real sacrifice for them.

I was born early enough, and was fortunate enough, to have had the opportunity as a graduate student in 1962 to study the behavior of ^{131}I , ^{137}Cs and ^{90}Sr from nuclear testing in wild deer and in their Rocky Mountain ecosystems. This work spread to other radionuclides such as ^{238}U and ^{239}Pu and to other organisms such as trout living in high mountain lakes. I could not believe my good fortune of being able to work in the mountains, collect samples, analyze them with fascinating laboratory equipment such as NaI detectors and liquid scintillation counters, learn from great teachers and scientists, and even get paid for it.

In 1961, the first national symposium on radioecology in the U.S. was held at Colorado State University, where I was studying chemistry and ecology. I was not yet involved in radioecology then, but I had the chance to help the organizers, run slide projectors and lead a field trip into the Colorado Mountains because I knew some geology and the names of most plants and animals in the region. I met several scientists at the meeting who provided me with a sense of appreciation of this relatively new field of radioecology. I could quickly see how virtually all the basic sciences, such as mathematics, physics, chemistry, biology and ecology were the essential academic foundations for radioecology. More importantly, I began to see how important the field of radioecology was to society as a whole. A few short years later, I came to believe deeply in what I was doing and could see that working in radioecology meant much more than a graduate degree and a paycheck; this work could influence important management decisions at national and even international

levels.

I don't think I need to tell this audience how important radioecology is today. I think its importance is far out of proportion to the monetary resources put into it and to the number of scientists advancing it. We all know well the enormous difficulties and challenges now faced by human societies world-wide. Expanding human populations, increasing per-capita resource consumption, deep religious and cultural differences, and a finite world with finite resources all conspire to create threats and instabilities. The threat of global climate change, which most scientists blame at least in part on our consumption of carbon-based fuels, suggests the need to rely increasingly on commercial nuclear power, which produces far less carbon dioxide per unit of available energy than other method employed to date. Many people think that nuclear energy might also help to alleviate some of the political and economic problems stemming from the geographically uneven distribution of the world's oil reserves.

If significant global expansion of commercial nuclear power is to happen, as it now seems, radioecologists will be needed in far greater numbers than at present. They will be called upon to educate, to learn more than we now know, to evaluate new situations, and to provide guidance in avoiding problems or dealing with them intelligently should they occur.

Regretfully, the social instabilities resulting from the conditions I have already mentioned, have helped to foster international hostilities, terrorism, and great public fears. We hope and pray that the dark side of nuclear energy never finds its potential to destroy or terrorize. Nevertheless, it would seem prudent for society and its leaders to understand the importance of increasing the base of knowledge and human experience in radioecology so that we can, if necessary, deal more effectively with radioactive contamination, whatever the source.

The problems stemming from the increasing effects of the human population on the quantity and quality of global resources also calls for a better understanding of the environment we all share. Radioecology has contributed greatly to our knowledge of how both vital and dangerous materials are circulated by air and water, how they behave in ecosystems, and how they accumulate in plants, animals and people. The scientific use of radioactive tracers still offers tremendous potential to increase our knowledge of how individual organisms, populations, ecosystems, and even the earth's biosphere, function.

Were I young enough to have a second career, this is the area I would choose to study.

When I was notified of this award, I wanted to learn more about the legendary Russian/Ukrainian scientist Vladimir Ivanovich Vernadsky, hailed by some as the "Russian Scientist of the 20th Century". I was thrilled to learn of the tremendous breadth of his scientific interests, including chemistry, mineralogy, geology and biology. These interests extended to geochemistry, radiogeology, atmospheric sciences and hydrology, and specific studies on uranium and radium. His main work *La Geochimie*, was published in French in 1924. The final chapter of this book deals with the geochemistry of radioactive compounds. So broad was his knowledge and interests, that he, perhaps more than anyone, defined and described the earth's biosphere. And, in thinking about human influences on the condition of the earth's biosphere, he largely developed the notion of the noosphere, with humans as an integral part. In 1922, the day of opening of the Radium Institute in St. Petersburg, he, as its Director until 1938, gave a speech. He said: "*Soon man will have atomic power at his hands. This is a power source which will give him a possibility to build his life just as he wishes. Will he be able to use this force for good purposes and not for self destruction? A scientist must feel responsible for the results of his studies!*"

In reading about Vladimir Vernadsky, as well as the 1896 work in Russia by Tarkhanov on the effects of X-rays on lamprey eggs, I am reminded that radioecology, in its basic forms, has been going on for 100 years or longer!

It is now our challenge to further the cause of radioecology and to keep it growing for another 100 years! This is challenge is certainly true in the United States where moral and financial support for radioecology has declined dramatically over the last two decades. Fortunately, during this same period, radioecology has advanced greatly in Western Europe, Russia, the Ukraine, Japan, and a number of other countries. It is also fortunate that radioecology has been continually very strong in Russia and nearby countries for perhaps 40 years or longer, thanks to outstanding scientific leaders such as Rudolph Alexakhin and Gennady Polikarpov. As I transition into my days of retirement and reflection, I will be watching your research in radioecology with great interest. I believe in you, in our colleagues unable to be here tonight, and in the great importance of our chosen field.

Thank you very much for this wonderful award, and for the chance to share a few thoughts with you.