



Remembrance of six prominent Serbian toxicologists who died during 2020 and 2021

Sećanje na šest istaknutih srpskih toksikologa koji su preminuli tokom 2020. i 2021. godine

Veljko Todorović

Serbian Medical Society, Academy of Medical Sciences, Belgrade, Serbia

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Introduction

Mass deaths of the population, doctors, and other medical personnel usually occur in wars, epidemics of infectious diseases, and natural or technological disasters.

In World War I, in the great epidemic of “three typhus” (spotted, recurrent, and abdominal), from the end of 1914 to the middle of 1915, 120 doctors died in Serbia: 87 members of the Serbian military ambulance, 21 doctors from international humanitarian missions who worked as volunteers in the Serbian military ambulance, and 12 doctors of the Austro-Hungarian and German armies who were prisoners of war¹. During World War II, from 1941 to 1945, 213 doctors died in the medical corps of the People’s Liberation Army of Yugoslavia². During the smallpox epidemic in 1972, 184 people fell ill on the territory of Serbia, while 40 of them died³. There were no doctors among the dead, but two nurses died – Dušica Spasić, who worked at the First Surgical Clinic in Belgrade, and Milka Đurisić, who worked at the hospital in Čačak, and they participated in the treatment and care of the sick.

In the last two years, more than 456 million people have fallen ill from the still current pandemic caused by the SARS-CoV-2, and more than six million have died. The first cases of the disease in Serbia were registered on March 6, 2020, and a total of 1,939,150 patients and 15,570 deaths have been recorded up to this day⁴. Statistical data have not yet been processed to provide an insight into the illness and death of doctors and other medical staff, who, by the nature of their work, are most exposed to the risks of illness and death from this contagious disease.

During the last 40 years in Serbia, despite the turbulent social events that took place in the last decade of the twentieth century – civil wars fought in one part of the former Yugoslavia and the aggression of the North Atlantic Treaty Organization (NATO) against Serbia and Montenegro – four times in a row, two or three prominent toxicologists passed away in two consecutive years, an example of which is given in the following text.

In two consecutive years, 1989 and 1990, two of the toxicologists who passed away were: Vojislav Ćosić (born 1920, in Vladimirci, Serbia – died 1990, in Belgrade, Serbia), a doctor, internist, cardiologist, and toxicologist, colonel, professor at the Military Medical Academy (MMA), head of the Department of Toxicology of the Clinic for Internal Medicine of the MMA from 1963 to 1983, and head of the Clinic for Emergency Internal Medicine from 1983 to 1986⁵; Miloš Stanković (born 1926, in Belgrade – died 1989, in Belgrade), a pharmacist, specialist in toxicological chemistry, scientific advisor, expert of the International Labor Organization, and head of the Toxicology Laboratory at the Institute of Occupational Medicine “Dr. Dragomir Karajović” in Belgrade⁶.

In the next two consecutive years, 2000 and 2001, two of the toxicologists that passed away were: Branko Banić (born 1931, in Belgrade – died 2000, in Novi Sad, Serbia), a doctor, pharmacologist, and toxicologist, professor at the Faculty of Medicine (FM) in Novi Sad, head of the Department of Pharmacology and Toxicology at the same Faculty⁷; Radivoje Kušić (born 1925, in Kraljevo, Serbia – died 2001, in Belgrade), a doctor, internist, clinical toxicologist, colonel, professor at the MMA, and head of the Clinic for Toxicology and Pharmacology at the MMA from 1981–1989⁸.

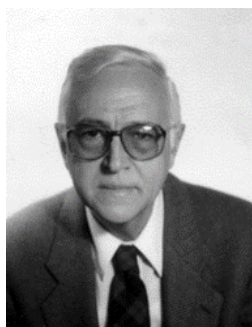
Further down the timeline, in the year 2008, two toxicologists died: Vladimir Vojvodić (born 1930, in Cetinje, Montenegro – died 2008, in Belgrade), a doctor, toxicologist, and pharmacologist, lieutenant general of the Yugoslav People's Army, professor at the MMA, member of the Academy of Sciences and Arts of Montenegro, head of the MMA from 1980–1988, and head of the Sanitary Administration of the General Staff of the Yugoslav Army from 1988–1992⁹; Branislav Toković (born 1930, in Dramče, near Delčevo, North Macedonia – died 2008, in Belgrade), a pharmacist and law graduate, toxicological chemistry specialist, colonel, professor at the MMA, and head of the Toxicological Chemistry Department at the MMA from 1968–1995¹⁰.

Finally, in the two consecutive years of 2010 and 2011, three toxicologists died: Danilo Soldatović (born 1927, in Strasbourg, France – died 2010, in Belgrade), a pharmacist, professor of the toxicological chemistry at the Faculty of Pharmacy (FPH) in Belgrade, director of the Institute of Toxicological Chemistry, and head of the Department of the Toxicology at the FPH in Belgrade – today, both institutions bear his name¹¹; Dušan J. Jovanović (born 1953, in Belgrade – died 2010, in Belgrade), a doctor, toxicologist and pharmacologist, colonel, professor at the MMA, and head of the National Center for Poison Control from 1998–1999 and 2006–2009¹²; Nedeljko Rosić (born 1932, in Belgrade – died 2011, in Belgrade), a doctor, toxicologist and pharmacologist, colonel, professor at the MMA, and head of the Sector for Scientific Research and Education of the MMA from 1986–1996¹³.

However, in less than two years, from January 2020 to October 2021, six top toxicologists died in Serbia: academician Dr. Milan Jokanović, professors Dr. Vesna Matović, Dr. Aleksandar Vidaković, and Dr. Dubravko Bokonjić, scientific advisor Dr. Neško Nešković, and colonel primarius Dr. Svetislav Randelović. Their professional and scientific work covered almost all areas of this multidisciplinary activity: analytical, professional, emergency, clinical, military, and experimental toxicology and ecotoxicology.

The aim of this paper was to present their life and work biographies.

Professor Aleksandar Vidaković, MD, Ph.D.



Professor Aleksandar Vidaković was a doctor, a specialist in internal and occupational medicine, a clinical toxicologist, a doctor of science, a full professor at the FM in

Belgrade, and a full member of the Academy of Medical Sciences of the Serbian Medical Society. He was born on April 16, 1936, in Belgrade.

He finished elementary school and high school in Vrnjačka Banja and the FM in Belgrade in 1960. He spent his entire work time in various positions at the Institute of Occupational Medicine and Radiological Protection “Dr. Dragomir Karajović” in Belgrade: he was head of the Department of Professional Toxicology, head of the Clinical Laboratory, head of the Clinic for Professional Toxicology, assistant director of the Institute for Scientific Research, director of the Institute (1993–2001), and advisor to the director of the Institute (2001–2003). In his professional, scientific, and pedagogical work, he mostly dealt with professional toxicology¹⁴. He passed the specialist exam in Occupational Medicine in 1967 and the specialist exam in Internal Medicine in 1972. He defended his habilitation work “Contribution to the knowledge of blood coagulation disorders under the influence of carbon disulfide” in 1970 at the FM in Novi Sad and his doctoral dissertation “Contribution to the knowledge of the pathogenesis of anemia in chronic lead poisoning” in 1975 at the FM in Belgrade. Dr. Vidaković was elected assistant professor for Occupational Medicine at the FM in Belgrade in 1979 and full professor in 1991. He was the head of the Department of Undergraduate Teaching and the Department of Postgraduate Teaching for the subject of Occupational Medicine at the same Faculty. He organized a fifteen-day course in Emergency Toxicology, was the organizer and manager of the specialization in Clinical Toxicology at the FM in Belgrade, a mentor in the preparation of 11 doctoral dissertations, 10 master theses, and several subspecialist papers, as well as a member of the commissions for evaluation and defence of subspecialist and master papers and doctoral theses.

He published 330 papers in the country and abroad and authored four monographs: “Criteria for Assessing Working Ability in Occupational Diseases” (1987), “Occupational Toxicology” (2000), “Forensic Expertise of Non-Pecuniary Damage in the Case of Occupational Diseases and Injuries” (2005), and “Forensic Expertise in Occupational Medicine” (2011). He was one of the authors of the textbooks “Occupational Medicine” (1978, 1981, and 1984) and “Fundamentals of Occupational Medicine” (1998), as well as the “Diagnostic and Therapeutic Medical Manual” (1980, 1992). Professor Vidaković was the editor-in-chief of the postgraduate textbooks “Occupational Medicine I” (1996) and “Occupational Medicine II” (1997), which are major works in this field, and one of the editors of the manual “Assessment of Working Ability” (2003) and the script “Urgent Toxicology” (1991). He was also a contributor to the “Medical Lexicon” (1999).

As an independent researcher, he led projects on the toxic effects of vinyl chloride, copper, aluminum, mercury, polychlorinated biphenyls, and pesticides, funded by the Republic Science Association. He was co-organizer of the scientific conference “Toxicology of Metals” (1999) and the organizer of 15 seminars on “Forensic expertise of non-pecuniary damage in occupational medicine”. He was very active in professional medical associations: President of the Section of Occupational Medicine of the Serbian Medical

Society from 1981 to 1983; one of the founders of the Section of Toxicology of the Serbian Medical Society; President of the Association of Toxicologists of Yugoslavia; member and president of the Association of Occupational Medicine of Yugoslavia; member of the Organizing Committee of the Sixth (Tara, 1994), Seventh (Igalo, 1998), and Eighth (Tara, 2002) Congress of Toxicologists of Yugoslavia. He was elected an associate member of the Academy of Medical Sciences of the Serbian Medical Society in 1994, and a full member in 1996.

He passed away on January 17, 2020, in Belgrade due to the worsening of previously established chronic diseases.

Professor Vesna Matović, pharmacist, Ph.D.



Professor Vesna Matović was a pharmacist, a specialist in toxicological chemistry, a doctor of science, and a full professor at the FPH in Belgrade. She was born on May 10, 1953, in Belgrade.

She finished elementary school, high school, and FPH (1977) in Belgrade. From 1978, she worked at the Department of Pharmaceutical Chemistry, where she was elected as an assistant trainee in 1980. She was elected assistant professor of Toxicological Chemistry and Clinical Toxicological Analysis in 1992, associate professor in 1997, and full professor in 2004¹⁵. She defended her master's thesis titled "Changes in copper content in the organs of experimental animals in the conditions of saturnism and manganism" in 1981 and her doctoral dissertation "Antagonism of lead and magnesium in the conditions of saturnism" at the FPH in Belgrade in 1991. She passed the specialist exam in Toxicological Chemistry in 1994. She participated in the organization and implementation of teaching and numerous other activities at the FPH in Belgrade: she was head of academic doctoral studies, module Toxicology; she participated in the implementation and organization of theoretical classes in integrated academic studies in the study programs of Pharmacy and Pharmacy-Medical Biochemistry in six subjects – Toxicology, Clinical Toxicological Analysis, Introduction to Medical Biochemistry, Acute Drug Poisoning with Analytics, Human Health Risk Assessment, and Ecotoxicology; she organized and conducted classes for the following specializations: Toxicological Chemistry, Toxicological Risk Assessment of Environmental Pollutants, and Sanitary Chemistry. She was a mentor in the preparation of six doctoral dissertations and one

master thesis and several times a member of examination commissions for the defence of doctoral dissertations.

Professor Matović was the author of four textbooks for pharmacy students: "Toxicology of Metals" (2010), "Drug Poisoning – Selected Chapters" (2013), "Practicum in Toxicological Chemistry" (2017, four editions), and "Practicum in Clinical Toxicological Analysis" (2017, four editions). She reviewed four textbooks for pharmacy students and numerous papers in journals from Science Citation Index list. She was the author of about 200 papers published in leading international and national journals or as Analytics chapters in books and thematic monographs. She gave several plenary lectures by invitation at international and national congresses of toxicologists. Professor Matović was the director of the Institute of Toxicology "Academician Danilo Soldatović" and the head of the Department of Toxicology at the FPH in Belgrade from 2001 until her death. She was a member of the Presidency of the Association of Toxicologists of Yugoslavia from 1994 and Deputy President of the Association from 2002 to 2010. When the Association of Toxicologists of Serbia was formed as a replacement for the Association of Toxicologists of Yugoslavia in 2010, she was elected the first president and performed that duty until she died in 2020. In the Section for Toxicological Chemistry at the Pharmaceutical Society of Serbia (later renamed the Pharmaceutical Association of Serbia), she was secretary from 1986 to 1994 and president from 1994 until her death. She was the vice president of the Pharmaceutical Association of Serbia from 2010 to 2015, and after that, the president until her death. During her term as president, the Association of Toxicologists of Serbia was admitted to the European Association of Toxicologists (EUROTOX) and the International Union of Toxicologists (IUTOX) in 2010. From 2014, she was a member of the Executive Board of the European Association of Toxicologists. She was the president of the Organizing Committee of the 10th (Palić, 2010), 11th (Sremski Karlovci, 2014), and 12th (Belgrade, 2018) Congress of Toxicologists of Serbia, and the 10th Congress of Toxicologists in Developing Countries (Belgrade, 2018). She spoke English, French, Italian, and Russian; she retired in 2018.

She passed away on January 29, 2020, in Belgrade after the worsening of previously established chronic diseases.

Neško Nešković, agronomy engineer, Ph.D.



Dr. Neško Nešković was an agronomy engineer, a doctor of science, an ecotoxicologist, and a scientific advisor. He

was born on October 24, 1943, in the village of Donja Ljubovidja, municipality of Ljubovija, Serbia.

He finished primary school in Donja Ljubovija and Ljubovija and secondary agricultural school in 1961 in Šabac. As a high school student, he participated in the work action in 1960 on the construction of the road Preljina–Čačak–Titovo–Užice. He graduated from the Faculty of Agriculture (Plant Protection Group) in Belgrade in 1966. He defended his master's thesis "Ecology of rats (*Rattus* sp) on agricultural-industrial facilities" at the Faculty of Natural Sciences in Belgrade (Department of Biological Sciences, Subdivision of Animal Ecology) in 1970 and his doctoral dissertation titled "Study of metabolism and toxicity of carbaryls and propoxur in experimental animals" at the Faculty of Agriculture in Belgrade in 1976¹⁶.

At the Institute for the Application of Nuclear Energy (INEP) in Agriculture, Veterinary Medicine, and Forestry in Belgrade, he worked as an expert associate (1967–1970), assistant (1971–1977), research associate (1978–1983), senior research associate (1984–1988), and scientific advisor (1989–1990). In the period 1991–2003, Dr. Nešković worked at the Institute for Plant Protection and the Environment in Belgrade, Topčider, and from 2003 until his retirement in 2008, as a scientific advisor and head of the Laboratory of Toxicology at the Pesticides Center of the Institute for Agricultural Research "Serbia", i.e., at the Institute for Pesticides and Environmental Protection, Zemun, Belgrade. During his work at INEP (1967–1990), he was the head of the Laboratory of Toxicology (1971–1978), the head of the Laboratory of Comparative Toxicology and Ecotoxicology (1979–1981), the acting director of the Institute for Pesticides and Protection Environment (which was part of INEP), director of INEP (1982–1987) and head of the Laboratory of Toxicology (1988–1990). During that period, he performed other duties, including the function of the President of the Scientific Council of the Institute. He was a member of numerous expert commissions at the Institute, but also in Belgrade, across the Republic of Serbia, and even in ex-Yugoslavia. During his work at the Institute for Plant Protection and Environment in Belgrade (1991–2003), he was a president of the Institute Council, a president of the Board (1993–1998), a member and a president of the Scientific Council, a deputy director (1998–2000), and an acting director of the Institute (2000–2002).

In the period 2002–2007, Dr. Nešković was a member, and from 2005–2007 a president of the Scientific Council of the Institute for Agricultural Research "Serbia" and the first President of the Scientific Council of the newly established Institute for Pesticides and Environmental Protection (2007–2009), in whose formation/independence he played a very important role.

In 1978, as a visiting researcher at the National Institute of Health and Environmental Protection in North Carolina, USA, and during July and August 1988, he completed a 30-day study tour of the State University of North Carolina.

He was the leader of the international scientific project "The Study of Bioavailability and Possible Toxicological Effects of Bound Pesticide Residues to Non-Target Organisms"

(1986–1991), funded by the Vienna International Atomic Energy Agency, as well as a research project (in two cycles) "Pesticides and the Environment" (1991–1995 and 1996–2000), funded by the Ministry of Science and Technology of the Republic of Serbia. He was one of the founders of pesticide toxicology in the Socialist Federal Republic of Yugoslavia (SFRY) and the Republic of Serbia and the initiator of research in the field of pesticide ecotoxicology. He was the first in Serbia to deal with the problem of "bound" pesticide residues in food and the issues of their bioavailability and possible toxic effects on users.

He participated in teaching at the Faculty of Agriculture in Belgrade, as part of full-time and postgraduate studies, in the subjects of General Phytopharmacy, Special Phytopharmacy, Agricultural Toxicology, and Ecotoxicology. He was a lecturer on two international courses (1984 and 1986) in Pesticide Toxicology, organized by specialized agencies of the United Nations (World Health Organization, Food and Agriculture Organization, and the International Labor Organization) for experts from developing countries. He was a consultant and manager in the preparation of several graduate and master theses and doctoral dissertations at the Faculty of Agriculture and Faculty of Natural Sciences and Mathematics in Belgrade in the field of plant protection, phytopharmacy, and biology, and a member of commissions for evaluation and defence of several master theses and doctoral dissertations.

He published in domestic and international journals and presented over 140 papers at scientific and professional conferences. With his papers, he participated in 25 scientific conferences abroad, where he presented 30 papers, and in more than 30 scientific-professional conferences in SFRY and Serbia, where he presented 50 papers. He was one of the editors of the monograph "Plant Protection – Today and Tomorrow".

Dr. Nešković was one of the founders and a member of the editorial board of the scientific journal "Pesticides" (1986), and from 1987 to 2007, he was the editor-in-chief. The journal was later renamed "Pesticides and Phytomedicine". He was a member of the editorial board of the "Journal of Environmental Science and Health – Part B: Pesticides, Food Contaminants, and Agricultural Wastes" (1991–1994) and the domestic scientific journal "Archives of Toxicology, Kinetics, and Xenobiotic Metabolism" (1993–2002), and a member of the publishing council of the journal "Herbalist" (*Biljni lekar*). He was a reviewer of papers in renowned international scientific journals in the field of toxicology and ecotoxicology: "Environmental Toxicology and Pharmacology" and "Food and Cosmetic Toxicology". He participated in the organization and realization of numerous professional meetings: he was the president of the Organizing Committee of the Third Yugoslav Congress on Plant Protection (1995) and the president of the Organizing Committee of the Second Yugoslav Conference on Plant Protection (1994).

He was a member of the Section of Toxicology of the Serbian Medical Society, the Association of Toxicologists of Yugoslavia, the Association of Toxicologists of Serbia, the

Society for Plant Protection of Serbia, the Society of Biologists of Serbia, the Society of Ecologists of Serbia, and foreign scientific societies: Society of Environmental Toxicology and Chemistry (SETAC), EUROTOX, and International Society of Ecotoxicology and Environmental Safety (SECO-TOX). In 1999, he was elected a member of the Research Board of Advisors of the American Biographical Institute, Raleigh, North Carolina.

He was an expert of the Federal Ministry for Development, Science, and Environmental Protection in the field of toxicology and ecotoxicology; member of the Committee for Environmental Protection of the Ministry of Science and Technology of the Republic of Serbia (1991–1995); member of the Federal Commission for the Registration of Pesticides (1991–2003), and the Federal Commission for Poisons (1992–2003). From 2003 to 2010, he was a member of the Poisons Commission of the Ministry of Science and Environmental Protection. From 2012 until his death, he was a member of the Committee on the Environment Board of the Serbian Academy of Sciences and Arts.

He was the winner of numerous social and guild awards and was awarded the Order of the Silver Wreath (1990). He was the first-class captain in reserve of the Serbian Army. He spoke English and Russian.

He passed away on February 19, 2021, in Belgrade as a result of the aggravation of previously established chronic diseases.

Professor Dubravko Bokonjić, MD, Ph.D.



Professor Dubravko Bokonjić was a doctor, a pharmacologist and toxicologist, a doctor of science, and a full professor at the MMA in Belgrade. He was born on December 6, 1950, in Zagreb, Croatia.

He started elementary school in Belgrade and finished it in Sarajevo, as well as high school. He graduated from the FM in Belgrade in 1976. He defended the master's thesis titled "Influence of central cholinergics and oximes on changes in conditioned behavior caused by non-lethal soman concentrations" in 1993 and his doctoral dissertation "Anticonvulsant and protective effects of diazepam and midazolam in animals treated with highly toxic organophosphorus compounds" at the MMA in Belgrade in 1995¹⁷.

After completing the obligatory medical internship, he was employed in 1977 at the Medical Department of the Sector for Nuclear-Chemical Protection of the Military Tech-

nical Institute in Belgrade, where he worked until 1998. During that time, he was engaged in research work in the Laboratory of Behavioural Pharmacology and Toxicology, where he was formed as a top researcher under the mentorship and with the support of prominent military pharmacologists and toxicologists, and led by colonels, professors Nedeljko Rosić, Bogdan Bošković, and Borivoje Stamenković. With the relocation of the Medical Department of the Military Technical Institute to the Poison Control Center at the MMA (1998), he served as head of the Department of Radiobiology (1999–2005), then head of the Department of Experimental Toxicology and Pharmacology (2005–2007), and head of the Institute of Toxicology and Pharmacology of the Poison Control Center (from 2007 until retirement in 2015).

During his professional career, he was engaged in research in the field of military toxicology (especially highly toxic organophosphorus compounds and psychochemical war poisons) and behavioral pharmacology. He was elected assistant professor at the MMA in 1995, associate professor in 2002, and full professor in 2007. He participated in various forms of education of personnel from various fields: medicine, pharmacy, dentistry, and veterinary medicine in basic academic studies and postgraduate training in the form of specialization and subspecialization, teaching Pharmacology and Toxicology, Scientific Research Methodology, and Medical Statistics. He gave lectures and exercises to students of the Faculty of Biology in Belgrade, FM in Foča (Republic of Srpska, Bosnia and Herzegovina), and from the establishment of doctoral studies at the FM in Banja Luka, he was a permanent teacher in Statistics in Biomedicine. He was one of the most beloved teachers; he always received the highest grades from students and teachers. From 2009 to 2014, he was the head of the Department of Pharmacological Sciences at the FM of the University of Defence in Belgrade. He was a mentor and collaborator in the preparation of several master theses and doctoral dissertations.

As an author or co-author, he published more than 300 papers, of which 54 were in international journals. His works have been cited 900 times by other authors. He was co-author with Professor Viktorija Dragojević-Simić and Professor Silva Dobrić on the textbook "Pharmaceutical Manual with Recipes" (2012 and 2015) and with Professor Jasmin Komić and Assistant Professor Nemanja Rančić on "Selected Methods of Statistical Analysis for Biomedical Research" (2018). He was the professional editor of the capital textbook "Dermatology 1–2" by Professor Dr. Đordije Karadaglić (2016). Professor Bokonjić was an associate on two research projects of the Ministry of Science and Technology of the Republic of Serbia. He was a member of the Serbian Medical Society, the Serbian Pharmacological Society, the Association of Toxicologists of Yugoslavia, the Association of Toxicologists of Serbia, the European Association of Toxicologists, the European Association for Clinical Pharmacology and Therapy, and the International Union of Pharmacological Societies.

He was awarded the White Angel Medal in 2002 for exceptional personal achievement in the field of humanities. He was praised and awarded several times by the director of the Military Technical Institute and MMA.

He died on May 27, 2021, in Belgrade after the aggravation of a previously established chronic disease.

Primarius Svetislav Randelović, MD, Ph.D.



Primarius Svetislav Randelović was a doctor, a specialist in internal medicine, a clinical toxicologist and nephrologist, a doctor of science, a primarius, and a colonel of the Yugoslav People's Army. He was born on February 14, 1934, in Aleksinac, Serbia.

He spent his entire childhood in his birthplace, where he finished elementary school (1949) and high school (1953) as the best student of the generation. He graduated from the FM in Belgrade in 1959. After graduating from the Medical Officers School and completing his military service, he was promoted to the rank of lieutenant of the Yugoslav People's Army in 1960. He served as a general practitioner in Skopje for a short time, and, after that, from 1962 to 1967, in the Garrison ambulance in Kumanovo. He completed his specialization in internal medicine at the MMA in Belgrade in 1971, and from then, until 1981, he worked at the Department of Nephrology of the Clinic for Internal Diseases of the MMA, where he dealt with complete clinical nephrology and was the head of the Department of Hemodialysis. He was one of the first doctors in Serbia to perform percutaneous kidney biopsies in order to diagnose inflammatory and degenerative diseases. In late 1978 and early 1979, he spent three months in professional training at Hammersmith Hospital in London. From 1981 to 1999, he worked at the Clinic for Toxicology and Clinical Pharmacology of the MMA, initially as Deputy Chief, and from 1989 until his retirement in 1999 as head of Clinic¹⁸.

He defended his doctoral dissertation, "Nephrotoxic manifestations of acute organophosphorus insecticide poisoning", in 1996 at the MMA.

As an author or co-author, he published 101 papers in domestic and foreign journals and collections of papers. He was the author of one and co-author of three chapters in the monograph of Associate Professor Luka Đorić (editor), *Emergencies in Internal Medicine* (1986). He was a member of the editorial board of the domestic scientific journal "Archives of Toxicology, Kinetics, and Xenobiotic Metabolism" (1993–2002). He was the head of the scientific research project of the Ministry of Defence, "Diagnosis and treatment of acute poisoning with organophosphorus compounds in humans". He was an active member of the Serbian Medical So-

ciety. He participated in founding the Section of Toxicology of the Serbian Medical Society and was its first president during two terms (from its founding in 1992 until 1995). He was a member of the Organizing Committee of the Sixth and a member of the Scientific Committee of the Seventh Congress of Toxicologists of Yugoslavia, which were held on Tara in 1994 and 1998, respectively. He enjoyed an exceptional reputation and authority in his profession. He was an expert in the field of clinical and military toxicology and nephrology. He loved and appreciated the military vocation very much; he was an honorable member of the officer corps. He proudly wore officer ranks. He was a top professional and patriot. Continuing the diligent work of his predecessors and encouraging the ability and creativity of his associates, he significantly contributed to the Clinic for Toxicology MMA, as the only clinical institution dealing with acute poisoning of adults in SFRY and the Republic of Serbia, highly positioned in the military and the civilian health system.

He was the holder of several decorations, including the Order of Military Merit with Silver Swords, the Order of the People's Army with a Gold Star, and the Order of Merit for the People with Silver Rays.

He retired in 1999 as a colonel. He passed away on September 6, 2021, in Belgrade, from the consequences of COVID-19 virus infection.

Academician Milan Jakanović, pharmacist, Ph.D.



Professor Milan Jakanović was a pharmacist, a toxicologist and pharmacologist, a university professor, a doctor of science, and a member of the Academy of Sciences and Arts of Republika Srpska, Bosnia and Herzegovina. He was born on December 6, 1955, in Dubrovnik, Croatia.

He finished elementary school and high school in Trebinje and FPH in Belgrade in 1979. He defended his master's thesis, "Influence of aliesterase inhibition and instruction on acute organophosphate toxicity in rats", in 1986 at the MMA in Belgrade and defended his doctoral dissertation, "Influence of phosphoramidite chemical structure on reaction with acetylcholinesterase and neurotoxic esterase *in vitro* and *in vivo*", at the FPH in Belgrade in 1991. He worked as an assistant at the Department of Analytical Chemistry of the FPH in Belgrade (1981–1982) and the Medical Department of the Military Technical Institute in Belgrade (1982–1994). He spent two years (1995–1996) as a visiting scientist

at the Institute of Occupational Medicine, University of Padua, Italy. He was the director of the Center for Biomedical Research at the Galenika Institute a.d. in Belgrade (1997–2006), where he managed the activities of preclinical and clinical development and drug registration¹⁹. He was elected a research associate at the Military Technical Institute in 1993 and an assistant professor at the MMA in Belgrade in 1994. At the FPH in Belgrade, he was elected a scientific advisor in 1998 and an associate professor of toxicology in 2000. He was elected a full professor at the FM in Niš (where he was the head of the Department of Pharmacy and head of accredited doctoral studies) and the FM in Banja Luka (where he was vice dean for Pharmacy from 2006 to 2010).

Academician Jokanović was elected full professor of Pharmacology and Pharmacokinetics at the FPH in Novi Sad in 2014. From 2005 to 2016, he also taught at the FM in Belgrade in postgraduate, specialist, and doctoral studies and academic specialization in the subject of Pharmaceutical Medicine. In 1989, he spent six months training at the Medical Research Council Toxicology Unit in Carshalton, UK. He spent six months training at ICN Pharmaceuticals Inc., Costa Mesa, California, USA (2000–2001). The main areas of scientific research and professional work of Academician Jokanović were: mechanisms of toxicity of anticholinesterase compounds (organophosphorus and carbamate insecticides and nerve agents) and their neurotoxic effects, research and development of new antidotes, pharmacokinetics and applications of existing and development of new tests in preclinical trials. He initiated two new areas of research in Serbia: research in the field of nanotoxicology and testing the biological compatibility of modern materials intended for use in medicine on cell cultures and experimental animals.

He published 66 papers in international scientific journals from the SCI list, 34 papers in international peer-reviewed journals, and 20 papers in scientific and professional journals in the Serbian language. He presented 150 papers at professional and scientific gatherings in the country and abroad. His works have been cited more than 2,200 times, of which about 200 times in books and monographs by foreign publishers. He gave 35 lectures in Serbia, Republika Srpska, and abroad.

In 2002, he published the textbook “Toxicology”, the first and, at that time, the only textbook of the entire toxicology of a domestic author in the Serbian language, which is used as a textbook at five faculties in Serbia. The expanded, supplemented edition of the same textbook from 2010, in 24 chapters and 400 pages, deals with general, clinical, and analytical toxicology. He published the book “Clinical Toxicology” in 2018. He published 18 chapters in toxicology in the books of the world’s leading publishers (Elsevier, John Wiley & Sons Ltd.) and eight chapters in books in the Serbian language. He was the editor-in-chief of the monograph

“The Impact of Pesticides” (Academic Publishers, New York, 2012), which describes the physical and chemical properties of pesticides, their toxic effects on humans and the environment, and analytical methods for proving them. Academician Jokanović was elected a member of the Academy of Sciences and Arts of the Republika Srpska in Banja Luka in 2008. From 2003, he was a scientific expert in the biological sciences of the World Health Organization and the Food and Agriculture Organization of the United Nations. He was a mentor or a member of the commission in the preparation and defence of 17 doctoral dissertations and 10 master theses. He participated in the realization of 16 projects financed by the Ministry of Science of the Republic of Serbia and eight international projects. He participated in the preparation of a large number of internal scientific research and development projects at the Military Technical Institute and Galenika a.d. in Belgrade, whose results have not been published because they represent a business secret. He was a member of nine international and domestic scientific and professional associations and a member of the presidency of the Association of Toxicologists of Serbia and the Serbian Pharmacological Society. He was a member of the editorial board of “Toxicology” from 2003, “Scripta Medica” and “World Journal of Pharmacology” and a reviewer of 45 journals indexed in the SCI list and PubMed, including “Toxicology”, “Toxicology Letters”, “Biochemical Pharmacology”, “Basic & Clinical Pharmacology & Toxicology”, “Chemico-Biological Interactions”, “Food and Chemical Toxicology”, “Environmental Toxicology and Pharmacology”, “Expert Opinion in Pharmacotherapy”, “European Journal of Neurology”, “Journal of Applied Biomedicine”, “Medicinal Chemistry”, “Neurotoxicity Research”, “Letters in Drug Design & Discovery”, “Vojnosanitetski pregljed”, “Drug and Chemical Toxicology”, “Archives of Toxicology and Occupational Medicine”, and “Neurochemistry International”, for which he did more than 300 reviews.

He passed away on September 17, 2021, in Belgrade, due to the COVID-19 virus infection.

Conclusion

For the first time in the history of toxicology in Serbia, six prominent toxicologists, who worked in various fields and multidisciplinary science and profession, died, all in a very short period of less than two years (from the beginning of 2020 to October 2021). All of them were doctors of science with the highest academic and professional titles, researchers, educators, and successful managers of the institutions in which they worked and professional associations in which they were active. The causes of death were different: in four of the deceased, the cause of death was the worsening of preexisting chronic diseases, and in two, the cause of death was infection with the SARS-CoV-2.

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