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IMWA INSIGHTS

Ernest Iakovlevich Kipko 1932–2016

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Ernest Kipko's Life

Prof. Dr Ernest Iakovlevich Kipko passed away on September 27, 2016 (Fig. 1). He was an Honorary President of IMWA, a laureate of the State Prize of the USSR, and an Academician of various national and international academies. In addition, Ernest was a remarkable leader, a remarkable friend, and a remarkable interlocutor with an inexhaustible fountain of humor.

Ernest's life should be considered in the light of his country's history. His early childhood coincided with the hard 1930s when dozens of millions of Soviet people were killed by Stalin's regime. He grew up during the "fatal 1940s"—the hard years of the Second World War and the post-war restoration. He became a student at the Ekaterinburg Mining University in the 1950s, during Stalin's decline. His professional start took place in the 1960s, during the "Thaw" in the Cold War. Subsequently, he became well known as a leader, a scientist, and the founder of the international grouting school.

Ernest attended primary and high school in a small Ural settlement. At age 16, to obtain his Soviet identity card, he had to address the so-called "fifth item" that existed in all of the official documents in the former Soviet Union: the question about nationality. Ernest's father was a Jew and his mother a German. However, the boy regarded himself as Russian: by language and culture, history and territory, by his human credo, by his life plans, and patriotic ideas. So, he wrote "Russian" to answer the question. But—within the small Ural mining community where he grew up, everybody knew who was who. Therefore, the officers told the boy: make your choice between your parents' origins, considering that nowadays we do not pursue Jews, but still—and he made his choice according to his father's wishes and wrote down "Jewish". This was an early and severe lesson of real life and the very first chance for the boy to define his own life path.

Ernest continued to make independent choices. When he graduated from Yekaterinburg Mining University (now the Ural State Mining University), he chose to be sent to the tiny mining village of Shcheglovka, Russia (Щегловка) rather than work in the Moscow coal region and excel in the capital office. He wanted to learn all the aspects and details of his specialty and he recognized that in a remote province, it would be possible to do this. He made his choice!

Fig. 1 Prof. Dr Ernest Kipko in his office in April 2010

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During the next 4 years, the young engineer served as Chief of the geological drilling facility in Antratsyt, Ukraine (Антрацит). His future was defined by his choices there. He and his team developed practical grouting technology, and Ernest was granted several patents for this technology. Soon, Ernest had to choose: either to concentrate on practical issues, and leave the scientific field to theoretical researchers, or to unite theory and practice within the provincial walls, in the small mining city "at the back of beyond". He, of course, chose the latter.

During the 1970–1980s, Ernest became general director of the powerful industrial-scientific conglomerate "Spetstamponazh-Geologiya" (STG), the pilot model of the Soviet mining economy. STG, under the Soviet Ministry of Coal, became the monopoly company for geotechnical grouting applications in the USSR and all of the former Eastern Bloc countries.

Those were years of hard work and fruitful international cooperation, as modern grouting technologies were being adopted all over the world.

In the days of the Chernobyl catastrophe, Ernest was among the first *liquidators*, the name given to the people who dealt with the accident's consequences. The grouting measures under the Prypiat River, in Ukraine, were accomplished based on his instructions and under his personal supervision—without personal protection. He can be seen as one of the heroes of Chernobyl, and he ensured the world's security with what he was able to give—at the risk of his own health.

His scientific achievements were recognized in 1982 in a Pravda article about the 1st IMWA Congress, where Ernest was elected IMWA vice-president: "Kipko and his colleagues set about formulating an engineering and mathematical method to develop the entire process of neutralizing water-bearing strata, scientific design and job quality control. … The new cementing agents readily 'flow' under pressure into all openings, even the most distant capillaries, prior to advancing the shaft or simultaneously with shaft sinking. Herein lies their advantage" (Pravda, 1982-09-15, V. Gerasimov from Budapest).

At the end of 1990, Tilak E. Verma from the U.S. Nuclear Regulatory Commission's Division of High-Level Waste Management visited the Soviet Union to identify "potential applications of the integrated grouting technology for nuclear and toxic waste problems." The aim of his visit was to observe sites where STG had used grouting technologies to control groundwater flow in deep mines and tunnels. It seems as if Ernest made a powerful impression, as Verma recommended that, in his opinion, the technology should intensively be used in the USA (Memorandum: http://bit.ly/ML031810296).

However, the 1990s was when the Soviet Union broke apart and was a period of economic decay. People rushed from hope to despair. Ernest revealed striking self-control and composure, doing his best to watch over his industrial child, which allowed STG to survive much longer then all of the other units in the Lugansk territories.

Ernest nicely summarized his company's achievements in a post to a list server in 1994: "Production association Spetstamponazhgeologia (STG) is the head organization within the region of the former USSR on research, design and contracting activities in the field of grout treatment technologies. Priority trends in the activities of STG include protection of mines, mine workings, quarries and other subsurface excavations from heading subsurface water and wastes of detrimental production. STG has successfully completed special works in eliminating water inflows over than 250 projects in the former USSR countries and in the countries of Eastern Europe." (bit.listserv.biosph-l on 1994-11-08: http://bit.ly/bit_listserv_biosph-l).

Despite being a civilian, Ernest performed like a General, and continued to do so throughout his life: developing expedient strategies and tactics, earning the commitment of his colleagues and subordinates, and enhancing mutual understanding for the sake of victory, whatever the cost. He mentored dozens of scientists and practical specialists, was the author and co-author of books, methodical instructions, and hundreds of papers and articles. Besides this, he also authored numerous humoristic fantasies, which he composed anew for each new generation of his family. If these stories were ever published, it would be a large volume, something like the "Tales of Uncle Remus"—and by the way, his family nickname was Brother Rabbit. He gave bright starts to his children, grandchildren, and grand-grandchildren who seem to all have inherited his life's priorities. They are following these priorities, despite the pain of his passing, with pride and awareness of their responsibility, in true faithfulness to his memory.

List of papers published in IMWA proceedings and journal

Between 1982 and 2001, Ernest published 21 papers in IMWA publications (6 in the journal and 15 in various IMWA proceedings; writing of his name exactly as it appeared in the printed version). They were focused on how grouting had been used for mine sealing, during shaft sinking, and for tunneling projects, and describe in detail the methods used. All of these papers are available for download at: http://www.IMWA.info:

Kipko EJ (1982) Integrated Method for Grouting of aquiferous formations developed at the P/O "Spetstamponazhgeologia". In: Proceedings of 1st international mine water congress, Budapest, Hungary, B, pp 310–319.

Kipko EJ (1985) Grouting of large karstic caverns in Dobrogea coalfield, Bulgaria. Int J Mine Water 4(2):35–39.

Kipko EJ (1985) New developments in the field of grouting using integrated method. In: Proceedings of 2nd international mine water association congress, pp 365–376.

Kipko EJ (1986) Water control by integrated grouting method in mining. Int J Mine Water 5(4):41–47.

Kipko EJ (1988) Application of grouting techniques for the solution of environmental problems during mining. In: Proceedings of 3rd international mine water congress, Melbourne, pp 655–666.

Kipko EJ (1996) Grouting large karst zones at Dobrugea coal field in Bulgaria. In: Paper presented at the Engineering in Karst, Portoroz, pp 1–13.

Kipko EJ, Allred CS, Hanley JE, Spichak YN, Hartley RM (1993) Use of the STG integrated grouting technology for the prevention of acid mine drainage in the United States. In: Proceedings of 1st African symposium on mine drainage and environment protection from mine waste water disposal, Chililabombwe, pp 377–399.

Kipco EJ, Lushnikova OJ (1987) Size estimation of water-sealing curtains around mine workings by hydrodynamic testing. Wydawnictwo Akademii Górnico-Hutniczej, Kraków.

Kipko EJ, Lagunov VA, Polozov JA (1985) Elimination of abandoned flooded Workings during Shaft Sinking at Yuzhnaya Mine. In: Proceedings of 2nd international mine water association congress 1:377–383.

Kipko EJ, Polozov JA (1993) Design and implementation of grouting programs for mine shafts sunk in complex geological conditions. In: Proceedings of 1st African symposium on mine drainage and environment protection from mine waste water disposal, Chililabombwe, pp 532–542.

Kipko EJ, Polozov JA, Spichak JN (1984) Hydrosealing and consolidation of geological faults during tunnel driving. Int J Mine Water 3(3):35–41.

Kipko EJ, Polozov YA, Spichak YN, Donchenko VA (1991) Grouting of karstified aquifers during shaft drilling at Palazu-Mare iron ore deposit. In: Proceedings of 4th international mine water association congress, vol 2, pp 95–104.

Kipko EJ, Spichak YN, Grinenko AN, Hartley RM, Raymondi RR, Levihn KA (1995) Clay-based grouting demonstration project at the Mike Horse Mine in Lincoln, Montana. In: Proceedings of water resources at risk, Denver, IMWA, pp 148–156.

Kipko EJ, Spichak Y, Polozov Y (1998) Water Sealing of fault zones at Ping lin pilot tunnel in Taiwan. In: Proceedings of mine water and environmental impacts, Johannesburg, vol 1, pp 141–148.

Kipko EJ, Spychak YN, Polozov YA (2001) Water control in metals mining. In: Proceedings of IMWA symposium on Belo Horizonte [CD-ROM], pp 1–7.

Kipko EY, Polozov JA, Lagunov VA (1984) Experience in sealing water bearing strata during deep shaft sinking. Int J Mine Water 3(4):55–62.

Kipko EY, Polozov YA, Spichak YN (1994) Environmental projection during mining diamond deposits of Yakutiya with the use of grouting curtains. In: Proceedings of 5th international mine water congress, Nottingham, UK, vol 1, pp 217–227.

Kipko EY, Polozov YA, Spichak YN, Popov AV (1997) Stabilized clay sealants for mining and hydraulic structure. In: Proceedings of 6th international mine water association congress, Bled, Slovenia, vol 1, pp 211–219.

Kipko EY, Polozov YA, Zabora VV, Smorondin GM (1994) Groundwater control in a shaft boring operation. Mine Water Environ 13(2):27–31.

Kipko EY, Spichak YN, Polozov YA, Kipko AE, Hepnar P (1993) Grouting of old flooded workings at M. Mayerova Mine in Czechoslovakia. Mine Water Environ 12(1–4):21–26.

Spichak YN, Kipko EJ, Polozov YA (1999) Environmental protection by application of the STG clay-based grouting method in mining and civil engineering. Proc Mine Water Environ Sevilla II:637–642.

Other selected papers and books:

Kipko EJ (1989) Groundwater control during shaft sinking. In: Proceedings of shaft engineering, Harrogate, pp 262–265.

Kipko EJ, Kipko AE (1990) A new technique for grouting old mine workings. Min Sci Technol 11:199–206.

Kipko EY, Spichak YN, Dolzhikov PN, Pozhidaev SV, Umanskii RZ (1998) Use of wastes for filling of shafts in shut down mines [in Russian]. Ugol' Ukrainy 6:13–14.

Kipko EY, Spichak YN, Dolzhikov PN, Tsaplin EG (1998) Soil stabilization mixtures based on mining industry wastes [in Russian]. Ugol' Ukrainy 1:43–44.

Kipko EY, Williams RE (1993) Integrated grouting and hydrogeology of fractured rocks in the former USSR. Society for Mining, Metallurgy, and Exploration, Littleton, CO, USA.

Kipko EY, Yamshchikov VS, Svitnev VP (1988) Joint acoustic control of the plugging process in a rock mass while constructing shafts. Sov Min Sci USSR 24(5):472–479. https://doi.org/10.1007/bf02498603.

Spiczak YN, Kipko EY, Polozov YA, Radchenko VV, Poshtuk AZ (2000) Development and implementation of novel technologies for environmental protection in eastern Donbass [in Russian]. Ugol' Ukrainy (4):13–16.