



World of MEPhI

April' 18

32 years have passed since the accident at the Chernobyl nuclear power plant. Then, in April 1986, the staff and students of MEPhI took part in the work to eliminate the consequences of the accident.

Read memories of the accident liquidator on the page 2

ГЕРОИ
РАБОТНИКАМ
ТЭЦ КТО
УЧАСТВАЛ
В РАБОТЕ

В РАБОТЕ
ПО
УСТРАНЕНИЮ
ПОСЛЕДСТВИЙ
АВАРИИ

Герои
профессионалы
тех, кто
защитил нас
от ядерной беды.

На всероссийском
25-летии
спасения
объекта "Укрытие".

30.11.2009г.

CHERNOBYL. EVIDENCE OF PARTICIPANT

On April 26, 1986, 32 years ago, the fourth unit of the Chernobyl nuclear power plant suffered the largest accident in the history of the world nuclear power industry. Employees, teachers, students and graduates of MEPHI took part in the work on elimination of consequences of the accident. One of them was Vladimir Naumovich Yatsenko, MEPHI graduate in the specialty «Dosimetry and protection». Now he is a head of the Laboratory of radiometric and spectrometric studies of a human and the environment at the Burnasyan Federal Medical Biophysical Center of Federal Medical Biological Agency. He was awarded the Order of Courage for the elimination of the consequences of the Chernobyl accident.

Today the Burnasyan Federal Medical Biophysical Center employs more than 300 MEPHI graduates who participated in liquidation of consequences of the Chernobyl accident.

From April 26 to May 5, 1986 the emergency response team in Chernobyl was headed by a graduate of MEPHI of 1959, an employee of the Institute of Biophysics, Valery Khrushch, who worked side by side with a doctor from the clinical hospital № 6 Georgy Selidovkin. It was they who expeditiously took away people affected by high radiation doses of more than 100 REM.

By the end of April 27 they selected 115 people and sent to the specialized clinic of the Burnasyan Federal Medical Biophysical Center. On a small platform in front of a special emergency room was a critical situation due to the accumulation of such a large number of people in contaminated by radiation personal clothes. Each of them received the dose of gamma radiation about 3 mP/h so they simply irradiated each other.

In this extreme situation, the involved dosimeters (scientists and engineers who graduated from MEPHI in different years, as well as doctors led by the head of the clinic at the Institute of Biophysics, Professor A.K. Guskova) measured the contamination of clothing and open skin areas only by the dose of gamma radiation. We carried out the necessary sanitary treatment without repeated control, radiometric and dosimetric control of the victims was carried out regularly in the departments of the clinic. There doctors determined doses of affected both by physical methods and medical indications. MEPHI graduates of various years participated in it: experienced D.P. Osanov (1955), A.A. Moiseev (1956), L.M. Mikhailov (1956), E.S. Leonov (1964), and just gaining the experience T.I. Gimadova (1969), S.I. Dementiev (1968), V.N. Klochkov (1972), Yu.V. Abramov (1972), A.V. Gordeev (1980), S.M. Shinkarev (1980), I.A. Gusev (1984) and others.

17 out of 115 victims didn't have confirmed diagnosis of

radiation sickness. 27 people died out of selected 108 patients with this diagnosis, the rest 81 survived.

The work of MEPHI representatives in definition of the radiation situation at the sites of remedial work on elimination of accident consequences was of utmost importance for operational decision-making. For this purpose, a group of dosimetrists was created, which consisted of employees of the Institute of Biophysics – graduates of MEPHI. I want to say that the specialists trained at the Department №1, have always been excellent dosimeters. I also joined the group. Selection for work at the Chernobyl nuclear power plant was careful, but there were many willing to help. We worked in shifts for 16 days. I also headed one of the teams, from 4 to 20 of June.

A team of the Institute of Biophysics delivered more than 10 thousand individual dosimeters to Chernobyl, because there was a shortage in dosimeters, one dosimeter was at best given out for 10 people. Dosimetry works was managed by T.I. Gimadova,



who graduated from MEPHI in 1969.

In order to determine permissible dose of possible exposure of those who were involved in emergency response operations we carried out measurements directly at the work site, for example, in a helicopter at an altitude of 200 m above the 4th unit to control the possible radiation damage to the pilots. Our measurements showed that the dose rate of gamma radiation at that time was 50 R/h, which means that pilots were able to get a dose of less than 2 REM in two minutes, that is within the safe limits.

Or together with a team of builders who strengthen the base under the reactor to prevent its sinking and possible radioactive contamination of groundwater, we conducted measurements under the 4th unit, the dose rate of gamma radiation was from 1.0 to 0.9 R/h.

In addition, we controlled the level of air pollution: for example we took air samples in the «red» forest, where the dose rate was 10 P/h, and opposite the «red» forest, where it was 15 P/h.

The accident at the Chernobyl nuclear power plant created many different myths

related to radiation exposure to humans and nature, which in turn led to people's unfounded fear of radiation.

The data of the Russian national radiation and epidemiological register states that 30 years after the accident, all assumptions and forecasts about the huge consequences of the radiation effects are not confirmed. In 60 years of scientific research, world science has never observed any genetic effects of radiation exposure on humans. Moreover, 20 years after Chernobyl the International Commission for radiological protection, realizing that there is no reason to talk about genetic risks, reduced their value by almost 10 times. Therefore, talks about the genetic consequences of the Chernobyl accident can be called, at least, a fantasy.

The study of causes and consequences of the Chernobyl accident led to the creation of modern technologies to ensure the safe operation of nuclear power facilities. Today, the world has not only returned to the widespread use of nuclear power, but many new countries have announced their plans to develop their own nuclear industry.



WINNERS OF INTERNATIONAL COMPETITION OF YOUNG PHYSICISTS CONGRATULATED IN STATE DUMA

On April 4, the State Duma of the Russian Federation has held an awarding ceremony for the winners of the annual International competition of young physicists, among who was a master degree student of MEPhI.



The competition was organized by the Moscow physical society, the Lebedev Physical Institute of the Russian Academy of Sciences and the Russian Academic Foundation for researchers, students and post-graduate students up to 26 years.

The master degree student of the SEC NEVOD at the National Research Nuclear University MEPhI Vladislav Vorobyov became the winner of the "Fundamental physics" section with a poster report "Registration of muons groups of high density using a coordinate-tracking facility with drift chambers". Vladislav was awarded a diploma for his dedication, hard work, creative scientific potential and outstanding achievements in physics for the sake of Russian science.

The winners were congratulated by representatives of the National Research Nuclear University MEPhI, Moscow Institute of physics and technology, Institute of Radio-Engineering and Electronics (IRE RAS), the Lebedev Physical Institute of the Russian Academy of Sciences (LPI RAS), Peoples' friend-

ship University of Russia (RUDN University), Polyus Research Institute of M.F. Stelmakh, as well as other leading technical universities and institutes.

The Director of IRE RAS Sergey Nikitov stressed the importance of intersectoral cooperation and pointed to the relevant opportunities for young scientists to apply theoretical knowledge in practice. Nikolay Kargin, vice-rector of MEPhI, spoke about the significant success of the University in attracting young professionals to cooperation.

Participants of the round table noted the positive dynamics of Russian technical universities in the framework of the Project 5-100, the high demand for their graduates, as well as the growth of technical education in the country as a whole.

Representatives of the Moscow physical society presented initiatives aimed at the development of engineering education in Russia and increasing the job's attractiveness for young scientists at Russian enterprises.

INTERNSHIP IN THE MAIN TECHNOLOGY INSTITUTE OF JAPAN

Postgraduate students and undergraduates of INPhE have undergone training at the Tokyo Institute of Technology (TIT). This was part of the implementation of the interuniversity project «Training of leading scientists and engineers in the field of health, medicine, nuclear power and energy industry between Japan and Russia», which is designed for 5 years.

As part of the project, MEPhI has already received three students from Japan for a two-week internship, which took place at the Department №1, Department №2 and the Laboratory of computer engineering modeling in the field of nuclear technology. During their stay in MEPhI, Japanese students got acquainted with the

basic principles of reactor control under normal and emergency operation modes, gained knowledge in the field of ionizing radiation and radiometric and dosimetric control equipment, practiced in complex modeling of nuclear power plants with the help of modern Russian and foreign codes.

The next stage was a two-week internship of our young scientists in TIT. Postgraduate students from INPhE Anton Smirnov and Evgenia Korneva told about their experience.

Anton Smirnov:

- Selection of masters and post-graduate students of MEPhI for an internship at the Tokyo Institute of Technology was quite serious. One of the mandatory criteria was excellent knowledge of English, and,

of course, scientific specialization, corresponding to the subject of TIT research. Japanese colleagues are interested in adopting our experience in developments.

Time after time I have presented reports at international conferences in European countries, for example, Italy, Germany, France, so I speak English quite freely.

I trained under the guidance of Professor Toru Obara in a laboratory that deals with innovative reactor technologies. By the way, the laboratories in TIT are called both large structures like our institutions and their subdivisions – research groups, indicating the name of the Professor, steering the group. During a two-week internship, we performed calculations of one of the advanced reactor concepts, analyzed how the characteristics of

the facility were changing depending on certain conditions. This only partially corresponds to the course of my studies at MEPhI, but its benefits are indisputable. At the end we had a ten-minute defense of the presentation beside the staff of the laboratory.

We were integrated into a permanent group of 20 people, 15 of them are students, and only a half are Japanese. The rest of the guys are from neighboring countries – Vietnam, Malaysia and others. Relations in group are very warm, hospitable, we had an informal cultural program after the working day, walked around the city. What particularly surprised me was the exorbitant order and cleanliness in the streets. Also very tasty Japanese food, fish in sushi were really fresh, as they say - «in the morning it did not think that it will be food in the evening.» The menu of our restaurants does not include even five percent of the cuisine that Japan has.

During a two-week internship, we were paid a scholarship of 80,000 yen, which is about 40 thousand rubles. And it is very generous, it was enough for food, transport, souvenirs.

Our Japanese colleagues organized a cultural program especially for us. We visited one of the oldest cities in Japan – Kamakura, which is actually the same age as Moscow, the city was founded in 1192.

Eugenia Korneva:

- I was trained in the laboratory of radiochemistry under the guidance of Professor Tsukahara. The research group, where I worked, is focused on the release of certain radionuclides from liquid radioactive wastes. My task was to conduct several tests, but since they are long-lasting, I managed to completely hold only one. Preliminary preparations for two tests were already done, so I was already in the

final part of the analysis.

The Laboratory of radiochemistry is an international one. I worked with students from the South Africa, Korea, China, Thailand, and the relationships between all of us were wonderful. I was the only one from Russia in the group and it was very good because there was no temptation to communicate only with fellow nationals. I was fully immersed in an international environment, therefore, besides the scientific experience, got a good experience of English. We actively communicated, discussed working moments, walked together after work around the city.

It was my first internship; I used to take part in international conferences and various workshops in America and Moldova. The work I did at the Tokyo Institute of Technology is sure to contribute to my dissertation research.

Despite the fact that the trip to Japan had primarily scientific purposes, it was also a unique experience of getting acquainted with the culture, life and mentality of the Japanese nation. What impressed me most about Japan is food and transport. I agree with Anton, Japanese restaurants in Russia have nothing in common with dishes, which the Japanese eat constantly, and those that we have in Russia, for example, sushi and rolls, have quite different taste.

A transport system is very complex and interesting; in fact there are no buses, they are replaced by a network of ground trains. Railways run through Japan, it seems you can reach the most remote village by rail.

It's a pity that we didn't manage to visit the city of Fukushima, too far. But it means I have a reason to visit this interesting country again.

In September, our University will host the next group of Japanese students. Waiting for it!





IT IS SAFE TO DONATE BLOOD

On April 9, the Donor Day has been held in MEPH. The event was attended by 143 people, however, only 109 students were allowed to donate blood after medical examination. Organizers of the action reported about 49 liters of the collected blood.

One of those who conducted medical examination of students willing to donate blood was the doctor-transfusiologist of the mobile team of the Federal Biomedical Agency Ilya Shaposhnikov. He told about blood donation and why it is necessary to promote donor actions.

- If we talk about donation, people should know two facts above all others. First, donation is safe. And secondly, at the current stage of medicine development, the need for blood is huge, blood is always in need.

First of all, I think it is important to explain to people that donation is absolutely safe maintaining basic health standards. All blood collection points are equipped in accordance with the regulations, so the damage to your health can not be caused.

Another important task is to draw people's attention to the donation and convince them to donate blood. Of course, donors with a rare blood group, for example, the fourth negative, is worth its weight in gold, but it

does not mean that all others should take a passive part in donor programs. The most common blood groups are the most popular, so any blood is valuable and everyone should know about it.

In my opinion, in order to increase the number of donors, well-known people should donate blood and tell their audience about it in social networks. Nowadays, social networks are the main tool to draw attention to problems. It is a great idea to conduct donor days at universities, students come with friends, however, as I said, the need for blood is huge now and in order to always have enough, you need to effectively use social networks, talk about donation, about blood points and encourage more people to donate blood.

After the procedure, MEPH students did not go away, but stayed for tea and sweets, where they continued to communicate, sitting at large tables or lounging on colorful pouffes.

Mikhail, 4th year of study, ICIS: «I took part in the action, because my friends told me about it and offered to participate. It's not so frightening if go together. Also it's nice to think you're doing a good thing, and your blood can help someone.»

Alexandra, 1st year of study, PhysBio: «I saw the statistics that every third person on

the Earth requires a blood transfusion at least once in life. Then I start thinking that it could be not me but certainly someone whom I know. That is why I consider it my duty to attend Donor days at my University.»

Valery, 1st year of study, LAPLAS: «I came to donate blood to help someone. I urge people not to be afraid and to participate more actively in donor programs: find out where the nearest blood donation point is, and do not forget to bring your passport!»

Taisia, master degree student of the 1st year, INPhE:

«I came because I wanted to do a good deed. I was sure that the event would be well organized and I would meet a lot of friends and acquaintances. I realized that donating blood is not scary, so I advise not to be afraid and join us.»

Patimat, 4th year of study, ICIS: «There are many myths about the blood donation, and I'm sorry that some people mistakenly believe that you can get infected giving blood, and there-

fore do not take part in such actions. I want to prove that it is safe, and to contribute to the society.»

Ilya, a graduate of MEPH: «It's not the first time when I donate blood. I want to help people. I was pleased with the organizational aspects, which provide a good mood: a poster with the wishes, tea party, and it is indeed a pleasure to return to the home University and feel students' atmosphere.»

