**Failed threat: The Fukushima nuclear accident – 7 years after**

February 21st



On March 11, 2011 it will be exactly 7 years from the moment when the world once again recalled the danger of nuclear power. On that fateful day there was a strong earthquake in the area of Northern Honshu (Japan), which gave rise to a tsunami wave. The 14-meter wave flooded four of the six reactors of the Fukushima-1 nuclear power plant and disabled the cooling system.

This message gave rise to great [concern](http://context.reverso.net/%D0%BF%D0%B5%D1%80%D0%B5%D0%B2%D0%BE%D0%B4/%D0%B0%D0%BD%D0%B3%D0%BB%D0%B8%D0%B9%D1%81%D0%BA%D0%B8%D0%B9-%D1%80%D1%83%D1%81%D1%81%D0%BA%D0%B8%D0%B9/concern) in the Far Eastern regions of Russia, because from the coast of Japan is a stone's throw away to our closest borders, the Kuril chain of the Sakhalin region. There was a likelihood of a tsunami wave that could reach the South Kurile, North Kurile, Kurile urban districts, as well as the shores of the Kamchatka Peninsula. However, after the reports of the destructive seismic event, news of the accident at the nuclear power plant immediately began to pop up.

A whole monitoring system for changes in the radiation background was immediately launched in the territories of the Russian regions closest to the borders with Japan; it included various ministries and departments. On the basis of the crisis management centers of the Ministry of Emergency Situations of Russia, the work of interdepartmental operational headquarters was organized.

After the flow of information about the accident at the Fukushima-1, the operational headquarters were assigned the task of coordinating the actions of the forces and means of the National Emergency Prevention and Elimination System with possible contamination of the Far Eastern territory. The monitoring network was most widely deployed in the Primorsky, Kamchatka, Khabarovsk Territories and the Sakhalin Region, as the nearest border regions. All the forces and means of the Ministry of Emergency Situations of Russia, as well as the territorial subsystems of the Emergency Situations Department (of these entities of Russian Federation) were mobilized.

The operational headquarters consisted of representatives of territorial departments: Roshydromet (the Russian Federal Service for Hydrometeorology and Environment Monitoring), Rospotrebnadzor (the Federal Service for Supervision of Consumer Protection and Welfare), Institute of Tectonics and Geophysics of the Far Eastern Branch, Russian Academy of Sciences (Khabarovsk), Pacific Fisheries Research Center (Vladivostok), Institute for water and environmental problems (Khabarovsk), Institutes of Marine biology, Institute of Biochemistry, Institute of Biology and Soil Science (Vladivostok), branches of the Geophysical Survey of the Russian Academy of Sciences (Yuzhno-Sakhalinsk, Petropavlovsk-Kamchatsky), Rosselkhoznadzor (The Federal Service for Veterinary and Phytosanitary Supervision), Eastern Military District, Eastern Regional Command of Russia (the internal troops of the Ministry of Internal Affairs of the Russian Federation, now Rosgvardia), border control agencies of the Federal Security Service of Russia for the subjects of the Russian Federation, territorial offices of the Ministry of Internal Affairs of Russia.

630 additional stationary and mobile control posts (Roshydromet, EMERCOM of Russia (the Ministry of the Russian Federation for Civil Defence, Emergencies and Elimination of Consequences of Natural Disasters) and the Ministry of Defense were operating during the year to measure the level of radiation on the territory of the Far Eastern Federal District. Air and sea vessels were also involved in the conduct of radiation detection. Areas of radiation control were organized at the border and customs control posts. The Roshydromet radiation monitoring laboratory daily sampled air and precipitation in the vicinity of Yuzhno-Sakhalinsk, Kuril and South Kuril areas of the Sakhalin Region.

In total, 1,018 detachments (more than 11 thousand people and 800 units of equipment) were involved in the liquidation of possible radioactive contamination in the Far East.

At the same time, information on the state of radiation background levels was maximally open to the public. Measurements in a 24/7 mode were updated and published in the mass media and on publicly available Internet resources. One of the ways of on-line people information was placing in real time indicators of dosimeters on the sites of the main departments of EMERCOM in Khabarovsk, Primorsky, Kamchatka and Sakhalin regions. Responding to the needs of the population, in addition to radiation monitoring, the work of operational mobile control groups was organized, which went to citizens' appeals and conducted radiation measurements on specific objects (apartments, cars, etc.). In addition, outreach work with the population was conducted by psychologists. For the purpose of information and psychological support to the population of the Far Eastern Federal District, the work of the Support Hotline was organized, which received more than a thousand calls.

Thus, systematic and maximally open work on the study and assessment of possible consequences and threats to residents of Russia has allowed avoiding panic, rumors and conjectures. Scientific institutes based on long-term observations of flora and fauna, studies of sea currents, movement of air masses were also included in the work, carried out their calculations and assumptions.

Thanks to the experience of disaster management of the Chernobyl nuclear power plant accident, the Russian Emergency Situations System managed to achieve a clear understanding of the situation in the area of ​​the accident, promptly plan and conduct the entire range of preventive measures to protect the population and the territory of the Far Eastern Federal District.

The main distinguishing feature of the accident in 2011 in Fukushima in contrast to the Chernobyl accident is the absence of radioactive contamination of the territory of the Far Eastern Federal District.

The proof of this was the analysis of all measurements of radiation levels, as well as repeatedly conducted scientific research expeditions on the marine waters adjacent to Japan. The first of these expeditions was organized by the Russian Geographical Society in April 2011. 14 scientists and specialists from Roshydromet (the Russian Federal Service for Hydrometeorology and Environment Monitoring), Rosatom (Federal Agency for Atomic Energy), the Ministry for Emergency Situations and the Federal Service for Supervision of Consumer Rights Protection went to the Sea of ​​Japan from Vladivostok. Their task was to study the radiation situation after the accident at the Fukushima-1 nuclear power plant. They monitored the radiation situation starting from the Tsugaru Channel, which separates the Japanese islands of Hokkaido and Honshu, and further along the Pacific coast of the Kuril Islands to Kamchatka, took samples of water, air, samples of flora and fauna. For this purpose, special equipment was installed on board the scientific vessel. Then the scientists discovered particles of Fukushima cesium in the Kuril Islands (Kunashir) (in soil, vegetation and milk). But its concentration was negligible. The second research expedition along the same route took place one year after the first one.

Following the results of the third expedition, also organized under the aegis of the Russian Geographical Society, conclusions were drawn - the consequences of the accident at the Japanese nuclear power plant "Fukushima-1" did not pose a threat to the Russian coast of the Far East. Specialists of the state enterprise Rosatom of the V.G. Khlopin Radium Institute, Roshydromet, the Ministry of Defense, Rospotrebnadzor and the Maritime State University named after Admiral Nevelskoy took 14 water samples from the surface horizons for determination of radioactive isotopes of cesium-137 and strontium-90, 2 samples of water for the determination of plutonium-239 and plutonium-240, 25 water samples for the determination of tritium and 25 samples of airborne aerosols. As noted in the published report, the impact of the accident at the Fukushima-1 nuclear power plant on the state of the air in the surveyed region was not traced.

According to monitoring results, the gamma radiation dose above the surface of sea water during the expedition did not exceed the background level and turned out to be lower than it was recorded during the expeditions of 2011-2012. The radioactive isotope cesium-134 was not detected in all atmospheric air samples taken during the vessel's motion, and the content of cesium-137 was at the level of the global background. Other technogenic radionuclides in air filters were also absent from measurements. The state of the aquatic environment also did not cause concern for the research team. The effect of radionuclides on the state of the aquatic environment in places where scientists visited was practically undetectable, and contamination of hydrobionts with radioactive cesium was not detected.

Objective factors that allowed avoiding possible consequences for the Russian territories can be explained by the scheme of constant currents in the northern part of the Pacific Ocean, the Japanese Sea, the Bering Sea and other seas of the Far Eastern territories of Russia. The Japanese authorities, realizing their responsibility to the citizens of their country and neighboring countries, took prompt measures to eliminate the leakage of possible pollutants as soon as possible. The country's leadership has repeatedly made statements on this matter.

As the scientific community focuses on climate change caused by anthropogenic factors, the Arctic is becoming more and more interesting. Arctic region is called the most sensitive indicator for influence on the climate, but also a "litmus test" for the results of all negative aspects of human activity on the planet. Undoubtedly, this approach is the most topical (deserving attention) due to unique regional conditions, an isolated environment, which increases the opportunities for ecological biological, meteorological and other research, for those who prefer to work with materials that have not been significantly influenced by human activities. And over the past 20 years, the role of the Arctic as the heart of the Earth's "climate machine" has been revised and improved.

So, this remote region today is a huge ice research laboratory for experiments and sampling that help scientists understand the consequences of industrialization and unavoidable pollution, the exploitation of the Arctic Ocean's biological resources and transportation. All these studies are directly related to the ecological state of the region, which in turn can have a serious impact on the economy and politics of not only the Arctic states, but also those countries which are related to them in terms of trade, freight or even military interaction. It becomes clear that every great scientific discovery in the context of Arctic research attracts great attention of the scientific community, politicians and ordinary citizens. But this research implies a huge responsibility, because an incorrect interpretation of the results, errors of analysis can lead to unpredictable results.

Consider a study conducted by the University of Alaska in Fairbanks. Its results were announced at the annual meetings and seminars of the Alaska Whaling Commission (18-20.07.2016, Anchorage, Alaska, USA) and the Eskimo Whaling Commission (14-16.12.2015). Our American colleagues made a big step forward in studying the diseases of marine mammals, possibly of anthropogenic nature. In analyzing data from long-term monitoring conducted by Alaska University specialists in Fairbanks and the Department of Fisheries and Hunting of Alaska, they concluded that an unknown disease found in fur seals and walruses may be the result of exposure to the radioactive element Cesium-137. This disease caused damage to the skin and muscle tissue of mammals. An increasing number of animals suffering from skin ulcers, the researchers directly linked to the Fukushima-Daichi incident in March 2011. This is not the only cause of the disease mentioned in the report. Toxic pollution and an increase in the number of bacteria caused by rising ocean temperatures are also stated in the results of the study. In a further study, the authors demonstrate the results of a toxicological study of ocean water off the coast of Alaska for the detection of cesium-134 and cesium-137 isotopes. Both these elements are the direct result of human activity and do not occur in nature in a significant amount.

In view of the fact that no monitoring of seawater was made directly during and immediately after Fukushima, the authors used the results of later measurements that demonstrate the undetectable level of cesium-134 (the main isotope found in large quantities in water and soil in Japan, immediately after the incident) and a fairly small amount of cesium-137 (1.2-1.3 bq / m3 with US drinking water standards 7.400 bq / m3). Thus, there is no direct confirmation that the above-described problem is somehow related to the Japanese nuclear catastrophe, and cesium traces may be the result of nuclear tests or a number of incidents involving the leakage of nuclear waste resulting from the Camp Century activity (Project Iceworm).

But, as it was said earlier, the report was given with an incorrect interpretation, especially for the local population of Alaska. Fukushima was repeatedly mentioned in the report, so for non-specialists, the incident in Japan is the most convenient explanation for such anomalies. But for Japan, which tries to localize the consequences of the outbreak, it can become an extra reminder making country an easy target for environmental organizations and economic competitors.

So many men, so many minds. However, the goal of some scientists was to gather evidence and base their conclusions on objective and long-term data, other representatives of the world community went in search of new approaches to the problem of radioactive contamination turning towards the little studied Arctic.

*The article used materials published in various Russian media, as well as photographs from open information resources on the Internet*