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Inquiries have been made of the Academy of Medical Sciences of the USSR and its institutes by Soviet citizens and social organizations wishing to know how the cessation of tests of nuclear weapons in the atmosphere, under water, and in cosmic space has been reflected in the level of radioactivity on the earth and, consequently, in the health of the population. The Academy of Medical Sciences of the USSR considers that the following facts should be made known.

For several years now systematic observations have been made in the Soviet Union of the general environmental level of radioactivity, and the action of radioactive substances formed as a result of tests of nuclear weapons on man has been studied. These observations have been made by the research institutes of the Academy of Medical Sciences of the USSR in conjunction with radiological groups of the public health stations of the Ministry of Health of the USSR in all parts of the country, utilizing the latest advances in the fields of radiochemistry, radiometry, and spectrometry of nuclear radiations. The Soviet public health services have kept a check on the content of radioactive substances in food products—milk, meat, fish, vegetables, etc., in drinking water, in the atmospheric air, and in the human body, and also on the intensity of radioactive fallout on the earth's surface.

As a result of the haste in the field of the testing and improvement of nuclear weapons, brought to a head in 1945 by the United States of America, an ever-increasing amount of radioactive substances was disseminated into the human environment, and especially into the atmosphere, over a period of more than 15 years. Among these substances, those presenting the greatest danger to man are radioactive isotopes such as strontium-90, cesium-137, and iodine-131. Observations showed that during the period when nuclear tests were being carried out the quantity of products of nuclear explosions deposited as fallout in 24 h at times amounted to hundreds of millicuries per square kilometer, and on some days reached several curies per square kilometer.\* This intensity of radioactive fallout was 10,000 times higher than the intensity observed at periods when no nuclear weapons were being tested. The fallout of products of nuclear explosions led to intensive contamination of the external environment with radioactive substances, their migration along chains of nutrition (soil—plants—animal—man; plants—man, etc.) and, hence, to an increase in the content of radioactive substances in the human organism.

Investigations conducted by the research institutes of the Academy of Medical Sciences of the USSR have shown that if tests of nuclear weapons in the atmosphere, under water, and in cosmic space were continued with the same intensity as in previous years, it would be only a short time before the radioactive contamination of the biosphere would have increased to such an extent that the accumulation of radioactive isotopes in the human body, especially in children, would exceed the allowable level, i.e., the level presenting no danger to health. It must be borne in mind, in this connection, that irradiation on account of radioactive substances entering the human organism may cause disturbances of the human genetic apparatus, for its genetic consequences are cumulative and have no threshold, i.e., they develop in proportion to the total dose of irradiation and, consequently, may appear even after small doses of irradiation. If nuclear tests were continued, the incidence of hereditary diseases and congenital malformations would increase in subsequent generations.

The conclusion of the Moscow agreement on the prohibition of tests of nuclear weapons in the atmosphere, in cosmic space, and under water has put an end to the further entry of radioactive substances into the external environment and has paved the way to a rapid improvement in the overall radiation situation.

\*1 curie is equivalent to 37 billion fissions of atomic nuclei per second. 1 millicurie is equal to 0.001 curie.

At the present time the total radioactivity of the fallout has fallen to only 1% of that found during the period of the tests, and now averages about 1 millicurie per square kilometer per day. During the period elapsing after the cessation of the tests, radioactive substances such as iodine-131, barium-140, and other short-lived radioactive products of nuclear explosions, constituting the greatest hazard for man in the period immediately after the tests, disintegrated and are now without radioactive effect on the human organism. On account of the disintegration of short-lived gamma-emitting isotopes, the level of external irradiation of mankind has fallen significantly. Mention should also be made of the sharp decrease in the concentration of so-called hot radioactive particles in the atmospheric air, particles with especially high activity which, on entering the body, create microfoci of high irradiation.

As a result of the cessation of nuclear tests in the atmosphere, in cosmic space, and under water, we may soon expect a fall in the level of accumulation of long-lived isotopes (strontium-90 and, in particular, cesium-137) in the human body.

From the information in the hands of the Academy of Medical Sciences of the USSR it can be concluded that if henceforward no state conducts nuclear tests as prohibited by the Moscow agreement, in the very near future there will be a sharp fall in the amount of radioactive substances entering the human body, and the danger of unfavorable effects resulting from the action of radiation will be removed.

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