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## SYSTEM MANIPULATOR FOR COLLECTING SPACE DEBRIS AROUND THE PLANET EARTH

**Belashov Alexey Nikolaevich**

Theoretical Physicist

ORCID 0000-0002-4821-8004

**Abstract.** The article is devoted to a system manipulator for collecting space debris around the planet Earth. Space debris, consisting of fragments of satellites, spent nuclear reactors or individual radioactive elements located around the near-Earth space in the form of radionuclides, is deposited on the surface of the planet, bringing great negative changes to the ecology of our planet. The precipitated radionuclides on the surface of our planet begin to penetrate into living organisms of plants, animals or humans and form viruses of various etiologies in them. Moreover, the viruses of some living organisms, combining with the viruses of other living organisms, create resistant strains that are difficult to predict and change the ecosystem of our planet. The system manipulator can collect space debris to start the fight for the cleanliness of near-Earth space and improve the ecology of our planet.

**Keywords:** system manipulator, space debris collection, radionuclides, ecology of our planet, outer space.

Mankind has been interested in stars, outer space and near-Earth space since ancient times. Being on a fertile land, people were accustomed to the fact that they are supposedly the creators and masters of our nature, who can freely interfere with the laws of our universe. However, many people forget that the totality of all forms of matter in terrestrial and outer space is subject to laws that have been developed for many millions of years, and before interfering in one or another area of science and technology, it is necessary to think carefully about the consequences of making certain decisions. Now the human race is reaping the fruits of its dominion over the forces of nature, which has fully thanked and will still thank the imaginary creators and rulers over our nature in the form of pandemics and other cataclysms.

It should be emphasized that fragments of space debris rotating around

our planet and not emitting radionuclides from various materials pose a danger only to the safe operation of satellites and space stations. The main danger is borne by objects emitting radionuclides from various materials unnatural for nature, which are a source of increased radiation, which were made on earth during complex technical processes using a split atom, where these objects must be caught in the expanses of outer space and disposed of.

Natural radionuclides that have a source of ionizing radiation and contain radioactive material are formed from cosmic rays of galactic origin and come to planet Earth from the depths of the Universe, as well as during flares on the Sun. All radionuclides deposited on the surface of planet Earth are groups of atoms that have the property of radioactivity, with a certain mass number, atomic number and energy status of the nucleus. Cosmic radiation consists of particles captured by the Earth's magnetic field, galactic cosmic radiation and corpuscular radiation from the Sun. It consists of electrons and protons, as well as the nuclei of some light elements. Natural radionuclides generated by cosmic radiation components are formed as a result of numerous and ongoing nuclear reactions with high-energy photons, ions and elementary particles (primarily neutrons).

Cosmogenic radionuclides constantly arise in the stratosphere and upper troposphere (and partly in the lithosphere) due to the reactions of primary and secondary cosmic radiation (protons and neutrons) with the nuclei of stable atoms present in the air (nitrogen, oxygen, argon, etc.). Their maximum concentrations are reached at an altitude of 15 km. The rate of formation of radionuclides grows exponentially up to a certain height, and then drops sharply due to the rarefaction of the atmosphere and the escape of neutrons from its upper layers into outer space. On average -70% of cosmogenic radionuclides are formed in the stratosphere and 30% - in the troposphere.

In natural conditions, at the beginning of the formation of the planet Earth, radionuclides were the founders and participants in all chemical and biological processes occurring in living cells and were the initiators of interaction on all domains of the ecosystem of the planet Earth.

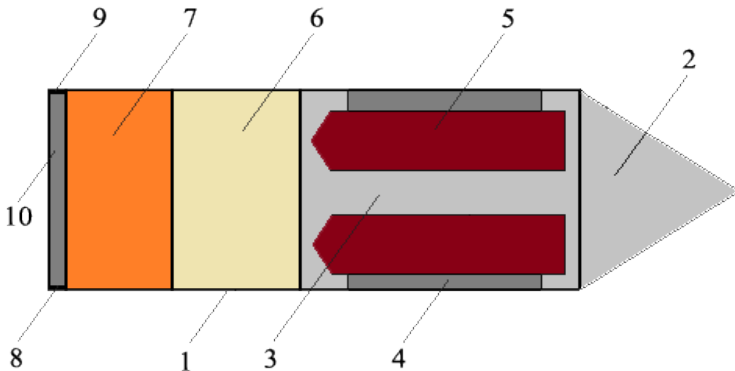
We know that radionuclides, which have a source of ionizing radiation, contain radioactive material that penetrates into a living cell, changes its chemical and biological properties and makes it pathogenic. Such living pathogenic cells are considered to be viruses that infect and change the entire organism, giving it new or altered exceptional properties.

It should be emphasized that knowing the mechanism of the emergence, spread and interaction of viruses that are an integral part of the



ecosystem of the planet Earth, you can take a fresh look at the diagnosis and treatment of affected organisms and correctly prevent the occurrence of any pandemics, but first you need to get rid of the causes that cause them. For these noble purposes, a system manipulator can serve to collect space debris standing from radionuclides of unnatural origin formed from many nuclear reactors that do not have proper protection that are located around the planet Earth.

The system manipulator, fig.1, consists of a rocket body 1 having a divider 2. Inside the rocket body 1 in compartment 3, propellers 5 are located on rotary devices 4. Inside compartment 6 and compartment 7, a set of rotating wave-like elastic metal plates bent into a spiral and connected with limiter. The system manipulator contains control sensors 8, an automatic control system 9 and a rotation mechanism 10. Control sensors 8 include a radioactivity sensor, a proximity and orientation sensor, a metal detector, an automatic approach orientation and control system 9 that control the entire technological process.

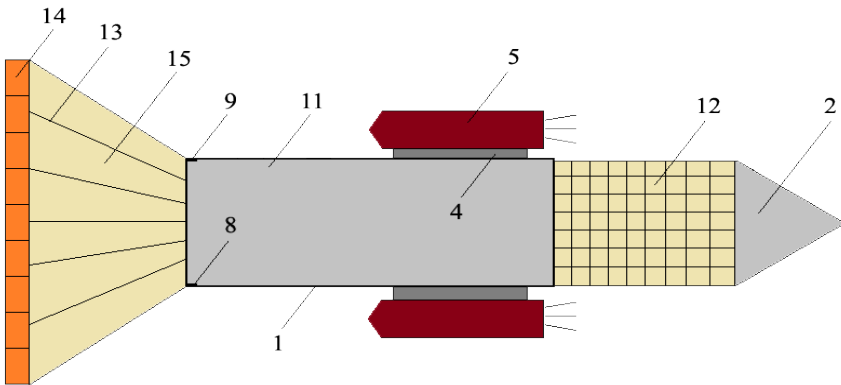


**Figure 1.**

The system manipulator works as follows

Entering outer space, Fig 2, the system manipulator 1 for collecting space debris is in the working position. With the help of rotary devices 4, the propellers 5 are installed in the working position. Further, an increased pressure is created inside the body 11, which removes the divider 2 from the rocket body 1 and straightens the container 12 for storing radioactive waste, and also removes from the compartment 6 and compartment 7 a lot of rotating wave-like elastic metal plates 13 bent into a spiral, which are connected with the limiter 14. After leaving the body, the metal plates

straighten and together with the limiter 14 form a catcher 15. One base of the many undulating spirals 13 is connected to the limiter 14, and the other base of the many undulating spirals is connected to the rotation mechanism 10 and the rocket body 1. After the sensor 8 detects a radioactive object in outer space, a signal is sent to the automatic approach and control system 9, which switches on a plurality of undulating spirals 13. Space radioactive debris emitting radionuclides, falling into the trap 15, with the help of a plurality of rotating wave-like elastic metal plates 13 bent into a spiral and move it through the inner part of the hollow body 11 of the rocket 1 into the container for storing space debris 12.



**Figure 2.**

Moreover, it is necessary to emphasize that radionuclides that are emitted from the surface of unnatural radioactive materials located in outer space pose a great danger to all mankind and the ecology of our planet. At the same time, you need to know that the number of radionuclides causing changes in living organisms is estimated at more than 2000 with unstable isotopes and about 270 species with stable isotopes. Depending on the amount of radionuclides that cause changes in living organisms, each type of radionuclide prefers to infiltrate and accumulate only in that living cell that perceives it as its own or cannot resist this pathogenic virus. For example, human lungs during the half-life of radionuclides prefer elements such as plutonium-238, plutonium-239 or uranium-233. The thyroid gland prefers iodine-125 during the half-life of radionuclides. Kidneys in the half-life of radionuclides prefer caesium-137 and so on ...

Among the many negative factors and processes that can affect the human body and its healthy functioning, the radiation field and the effect of ionizing substances on tissues and organs of the human body play an important role. Radiation exposure or contact with many radionuclides contained in the atmosphere of our planet, when in contact with human molecules and tissues, can lead to multiple biological and chemical mutations and cause dangerous diseases. It should be said that a person is constantly under conditions of radiation influence. However, if natural flows of ionizing substances do not have a negative impact and can rarely cause the development of any pandemics or other somatic ailments, then artificial contamination of man-made radionuclides with radionuclides is extremely dangerous and negative. In this case, with the appearance of uncontrolled radioactive radiation emanating from a large number of nuclear reactors of spacecraft, which are located in outer space around our planet, this process becomes irreversible.

In conclusion, we can say that it is very difficult to protect ourselves from uncontrolled radioactive radiation emanating from a large number of nuclear reactors of spacecraft located in outer space around our planet. However, it is even more difficult to make a universal vaccine against various types of pathogenic viruses, since they are accepted differently in different organisms. Pathogenicity is the ability of microorganisms (viruses, chlamydia, mycoplasmas, rickettsia, bacteria, fungi) to cause an infectious process, that is, to penetrate into the human or animal body, use it as an environment for their life and reproduction and cause pathological changes in organs and tissues. For example, this may depend not only on the type of a living organism, on the latitude where it is located, but also on the living conditions of these organisms, their image, behavior, nutrition, or interaction with other types of living beings.

In my opinion, our society needs to gradually get rid of uncontrolled radioactive radiation emanating from a large number of nuclear reactors of space satellites and vehicles that are located in outer space around our planet or switch to new safer technologies that do not create such problems for all mankind from which hard to get rid of. Such technologies already exist, but if this is a costly undertaking, then it is necessary for all countries using spacecraft to unify all alloys and materials used for nuclear reactors used in outer space.

At the same time, it is necessary to emphasize that all vehicles operating in outer space must be equipped with additional propellers and a movement mechanism so that after the guaranteed period of operation of nuclear reactors in outer space, these vehicles, by decision of the control center, could descend into low orbit for natural self-destruction.

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