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**INTERNATIONAL LEGAL MECHANISMS  
OF ENSURING SAFETY IN THE SPHERE  
OF THE ENVIRONMENT AND SPACE**

At the turn of the XX and XXI centuries, attention of the states to the unique opportunities the use of the outer space for economic, defense and scientific purposes provides increased. Rapid progress in the outer space exploration opened a new chapter in the history of the humankind. The last decade of development of the world cosmonautics showed that the previous paradigm of the international legal regulation needs serious upgrading with concepts and criteria of safety of space activities in the near-Earth space. Space activities and their consequences have always had global significance for the safety of the whole world community. The goal of the work is examination of the problems of the environment and space safety legal support. Today the world community faces difficult problems trying to ensure stable development and wishes to have means to provide global safety in the conditions of cardinal dynamic changes in the geopolitical environment and rising of global ecologic threats. One of the anthropogenic factors affecting space activities safety is formation in the outer space of objects that are by convention called «space debris». Observance by the states of guiding principles and rules of prevention of space debris formation adopted by the UN Space Committee will demand active development of the processes of exchange with information among the states concerning national mechanisms regulating and determining solution of this problem – prevention of space debris formation. Scientific importance of the work is determined by its analysis of legal norms of the ecology and discovery of the factors affecting the safety of space activities in the near-Earth space. This article proves the necessity of international cooperation of the states for solution of the problem of environment and outer space pollution.

**Key words:** space debris, pollution of outer space, space security.

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**Қоршаған орта мен ғарыш қауіпсіздігін қамтамасыз етудің  
халықаралық құқықтық механизмдері**

XX-XXI ғасырлар аралығында мемлекеттердің ғарыштық кеңістікті экономикалық, қорғаныс жән ғылыми мақсаттар үшін пайдалану ұсынатын бірегей мүмкіндіктерге деген назар аударуы артып келеді. Ғарышты игеруде жылдам алға басу адамзат тарихында жаңа тарау ашты. Әлемдік ғарышкерліктің соңғы он жылдағы дамуы халықаралық құқықтық реттеудің бұрынғы парадигмасын жер төңірегіндегі ғарыштық кеңістіктегі ғарыштық қызмет қауіпсіздігі ұғымдарымен және өлшемдерімен күрделі толықтыру қажет екенін көрсетті. Ғарыштық қызмет пен оның салдарлары бар дүниежүзілік қауымдастықтың қауіпсіздігі үшін әрқашан ғаламдық маңызға ие болған. Жұмыстың мақсаты қоршаған орта мен ғарыш саласында қауіпсіздікті құқықтық қамтамасыз ету мәселелерін қарастыру болып табылады. Бүгінгі күні дүниежүзілік қауымдастық тұрақты дамуды қамтамасыз етудің қиын мәселелеріне тап болып отыр және геосаяси жағдайдың түбегейлі

динамикалық өзгеруі, ғаламдық экологиялық қауіптердің өрши түсуі жағдайларында өз қолында ғаламдық қауіпсіздікті қамтамасыз етуге арналған құралдарға ие болғысы келеді. Ғарыштық қызметтің қауіпсіздігіне ықпал ететін антропогендік факторлардың бірі ғарыштық кеңістікте «ғарыштық қоқыс» деп аталатын объектілердің құралуы болып табылады. Мемлекеттердің БҰҰ Ғарыш жөніндегі комитеті қабылдаған ғарыштық қоқыстың құрылуының алдын алудың басшы қағидалары мен ережелерін сақтауы мемлекеттердің арасында бұл мәселенің шешімін реттейтін және анықтайтын ұлттық механизмдер туралы ақпаратпен алмасу үрдістерін белсенді дамытуды, ғарыштық қоқыстың құрылуының алдын алуды талап етеді. Ғылыми маңыздылығы жұмыста экологиялық бағыттағы құқықтық нормаларға талдау жүргізілгенімен, сондай-ақ жер төңірегіндегі ғарыштық кеңістікте ғарыштық қызметтің қауіпсіздігіне ықпал ететін факторлардың айқындалуымен анықталады. Бұл мақала қоршаған орта мен ғарыштық кеңістіктің ластану мәселелерін шешу үшін мемлекеттердің халықаралық ынтымақтасуы қажет екенін негіздейді.

**Түйін сөздер:** ғарыштық қоқыс, ғарыштық кеңістіктің ластануы, ғарыштық қауіпсіздік.

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### Международно-правовые механизмы обеспечения безопасности в сфере окружающей среды и космоса

На рубеже XX-XXI веков повышается внимание государств к тем уникальным возможностям, которые предоставляет использование космического пространства для экономических, оборонных и научных целей. Быстрый прогресс в освоении космоса открыл новую главу в истории человечества. Последнее десятилетие развития мировой космонавтики показало, что прежняя парадигма международного правового регулирования нуждается в серьезном дополнении понятиями и критериями безопасности космической деятельности в околоземном космическом пространстве. Космическая деятельность и ее последствия всегда имели глобальную значимость для безопасности всего мирового сообщества. Целью работы является рассмотрение вопросов правового обеспечения безопасности в сфере окружающей среды и космоса. Сегодня мировое сообщество сталкивается с трудными проблемами обеспечения устойчивого развития и желает иметь в своем активе средства для обеспечения глобальной безопасности в условиях кардинальных динамических изменений геополитической обстановки, нарастания глобальных экологических угроз. Одним из антропогенных факторов, влияющих на безопасность космической деятельности, является образование в космическом пространстве объектов, которые принято называть «космическим мусором». Соблюдение государствами руководящих принципов и правил предупреждения образования космического мусора, принятых Комитетом ООН по космосу, потребует активного развития процессов обмена информацией между государствами о национальных механизмах, регулирующих и определяющих решение этой проблемы, предупреждения образования космического мусора. Научная значимость определяется тем, что в работе проведен анализ правовых норм экологической направленности, а также выявлены факторы, влияющие на безопасность космической деятельности в околоземном космическом пространстве. Эта статья обосновывает необходимость международного сотрудничества государств для решения проблемы загрязнения окружающей среды и космического пространства.

**Ключевые слова:** космический мусор, загрязнение космического пространства, космическая безопасность.

## Introduction

The problem of environment and space activities safety in the near-Earth space is one of the most vexed global problems today, alarming the whole humankind, since the threat for space safety does not originate anymore exclusively from adversarial subjects and natural disturbances – outer space pollution bears bigger and bigger threat (Manzhula, 2013:175). Realization of global approach to ensur-

ing safety in the international space activities based upon flexible space policy realizing the principles of protection of the environment and ensuring safety of the Earth is deemed especially important.

The analysis of legal documents on global ecologic safety in the sphere of the environment and space activities showed that steps on development of a number of agreements aimed at solution of this problems were taken in the 1960s and the 1970s. They are: *Nuclear Test-Ban Treaty*, formally *Treaty*

*Banning Nuclear Weapons Tests in the Atmosphere, Outer Space, and Under Water* (1963). *Outer Space Treaty* (1967) is an international agreement related to the problem of preservation of stable ecologic state of the space environment. In conformity with the provisions of *Outer Space Treaty*, the following things are forbidden: injection into orbit around the Earth, placement in the space, and installation on celestial bodies of any objects with nuclear weapons or any other weapons of mass destruction; creation on celestial bodies of military bases, constructions, and fortifications, testing of any weapons and holding military maneuvers (Salmaer, 2015: 497). Article VI of the Treaty provides international responsibility of the states for national activities in the outer space (including the Moon and any other celestial bodies). Article VII provides international responsibility of the participants of the Treaty carrying on or organizing injection of objects into space, as well as of the state from whose territory or facilities space objects are launched, for damage caused by such objects or their parts on the Earth, in the air, and in the outer space, including resulting in pollution of the environment and the space. Two following interrelated obligations on prevention of potentially harmful consequences of space activities and preservation of the environment were fixed in Article IX of *Outer Space Treaty*: to carry on activities in the outer space «with due regard for interests of all other states»; to carry on study and research of the outer space, including the Moon and any other celestial bodies «in such a way that avoids their harmful pollution, as well as adverse changes of the earthy environment as a result of delivery of extraterrestrial matter», and for this purpose in case of necessity to take «proper measures». It follows from the first obligation, bearing wider character, that any activities causing disturbances or preventing any other states from research and use of the outer space are not permitted by the international space law. The second obligation is aimed directly at protection of the earthy and space environment from harmful consequences of space activities. The term ‘pollution’ in Article IX of *Outer Space Treaty* should be construed in the wide sense of this word and should include both intentional, and unintentional actions resulting in chemical, biological, radioactive, and any other kinds of environment pollution in the quantities that constitute a danger for maintenance of its natural equilibrium (Vereshetin, 1992:177).

A special place in the international legal regulation of problems of the ecology of the Earth and the space belongs to the *Convention on International Liability for Damage Caused by Space Objects*

(1972), which is the key source of the international law concerning responsibility for damage caused by space objects, for pollution of the environment and the space. This Convention is an inter-governmental document, signed by Great Britain, the United States of America and the USSR in 1972, expands *Outer Space Treaty* of 1967. The reason of creation of this document was the necessity of develop in a separate international act of the rules and the procedure of relative to the damage and also determine the rights and the obligations of the states-participants. The Convention reflects modern principles of the international law and in the present and in the future is aimed at protection of victims of the use of space objects. However, from the moment of adoption of the Convention, the level of development of the world cosmonautics has significantly grown. Thus, taking into account of the modern tendencies in the character of space activities, is impossible not to take in consideration the question: to what degree provisions of the Convention concerning responsibility and solidary responsibility can be deemed satisfactory and applicable to new realities. It is evident that use of the norms of this Convention at the present time is intricate (Vladimirova, 2014: 264).

A special document, though declaratively, but directly forbidding pollution of the environment and the space and having direct relationship to the examined problem is *Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques* (1977) (UN Treaty Series, 1978:151). But, in view of the universal character of the Convention, its contribution to the solution of the problem of ensuring organization global safety of the ecology of the Earth and the space bore a very general character. So, the perspectives of perfection of the international legal regime in the direction of the solution of the ecologic problem were very vague.

The problem closely related to the problem of the space debris is the threat of nuclear pollution. Nuclear radiation can create a serious danger for participants of piloted space flights. The threat of nuclear explosions in the outer space is especially serious, since without atmosphere that could mitigate them their impact would be extremely strong. Generated in such a way radiation can freely cover thousand kilometers, reaching even the Earth. In addition to danger for health, electromagnetic field created by a nuclear explosion, can be strong enough to break all electronic equipment within the limit of thousand kilometers. The evident risk of nuclear contamination is related to the possible space-based nuclear weapons placement and its use will create the envi-

ronment where such weapons will become the threat to the global safety (Viikari, 2008:45).

Nuclear power played a constructive role in space exploration and could continue it, but it has been burdened with a broad history of accidents and failures, both Soviet and American ones. Numerous nuclear spaceships emitted radioactive materials. In addition to it, nuclear power in the space on the whole was a source of international tension because of its role in the Soviet and American military space programs. As a result, scientists proposed to forbid the use of the nuclear power on the near-Earth orbit. Such prohibition would decrease the risks related to the nuclear engineering in the space and would permit to use it in those long distance flights where nuclear power is necessary. Reactors were also altered to increase safety. Unfortunately, most used nuclear power sources are in those parts of the space near the Earth that the most densely populated with debris. Nuclear engineering significantly widened space exploration. But it also demonstrated the potential of significant damage to the environment. Even if it is reasonably controlled, the nuclear power in the space will, probably, remain a complicated and expensive technology (Aftergood, 1991: 42).

United Nations General Assembly on December 14, 1992 approved and adopted *Principles Relevant to the Use of Nuclear Power Sources in Outer Space*. A special resolution accentuated applicability of the international law to the activity related to the use of nuclear power sources. This document provides obligation of the states injecting space objects with nuclear power sources on board to apply efforts for protection of persons, population, and biosphere from radiological dangers. The construction and use of space objects with nuclear power sources on board with high degree of confidence must provide such safety that, with foreseen normal or emergency circumstances, the degree of danger would be lower than the acceptable levels (Bennett, 1995:2). In the course of normal operation of space objects with nuclear power sources on board, the recommended by *The International Commission on Radiological Protection (ICRP)* requirement to ensure proper protection of the population must be observed. ICRP is an independent, international, non-governmental organization. It was founded in 1928 at *The Second International Congress on Radiology* in Stockholm. ICRP proposes its recommendations to national and international agencies, specialists in the area of radiation safety and protection of the man and the environment on normalizing and scientific support as assistance in management and realization of measures of radiation protection of the en-

vironment. The practical legislation in most countries mainly follow its recommendations (Kiselev, 2009). Today, realization in the international space activities of the global approach to ensuring safety and maintenance of strategic stability in the modern world based upon the space policy realizing the principles of balanced development of the humankind and providing of safety of the planet of Earth is seen as especially important.

### Methods

In the process of the research, such methodological principles as objectivity and historicism were used. The most important principle of the historic cognition is the principle of objectivity. Objectivity demands comprehensive analysis of historic facts, events, and processes. The following methods were used in the work: comparative method, typology and classification method, and system method. Use of the comparative method consists of the analytical comparison of activities of space powers in issues of ensuring by them of the environment and space safety. With the typology and classification method in the framework of the theme, the authors reduced the variety of events on the international arena to the events touching, mainly, actions of several space powers, which determined and are determining the policy in the use of the space sphere. The system approach permitted to trace the dynamics of development of space activities and reveal the key problems – one of which and the most important is the problem of ensuring safety of the ecology of the Earth and the space.

### Discussion

The humankind in the last years faced many problems related to the problems of ecologic protection. It is necessary to note that the current international law contains some norms of ecologic direction. The main principle of the international environmental law is the duty of the state to protect zones outside its jurisdiction from damage to the environment. The customary international law demands that all states behave in such a way as not to do harm to the environment outside jurisdiction of any state, including open sea, outer space, and Antarctica (Mirmina, 2005:158).

The states must, when investigating and using the outer space and celestial bodies, avoid their pollution and also avoid unfavorable changes of the earthy environment because of delivery of extraterrestrial matters (Article IX of *Outer Space Treaty*,

1967). In this connection, planning inter-planet expeditions (for example, to Mars), *inter alia*, includes technical working out of problems of biological safety for prevention of uncontrolled bringing earthy microorganisms to any other planets and vice versa. The problem of pollution of the near-Earth space with 'space debris' as pure theoretical one arose immediately after launch of the first satellites in the end of the 50s of the XX century. Understanding of its global character on the official level happened only in the end of the XX century. In 1993, the Secretary General of the United Nations in his report *Impact of Space Activities on the Environment* noted dependence of all countries of the world on negative impact of pollution of the outer space in virtue of its belonging to the whole humankind and also that this problem has global character: there is no pollution of the national near-Earth space, there is pollution of the Earth's space, affecting equally all countries directly or indirectly participating in its development (Space debris, 1998:38).

Definition of the concept of 'space debris' is absent in the international law. The following definition can be met in the legal literature: «This kind of objects includes any artificial objects on the orbit around the Earth, which are non-functional and concerning which one cannot expect the beginning or resuming of their supposed functioning, which is sanctioned or will be sanctioned in the future, including fragments and their parts. Space debris includes inactive space devices, used parts of rockets, material formed as a results of planned space operations, fragments formed by satellites and upper stages as a result of explosion or impact and also contained on board dangerous (nuclear, toxic, etc.) materials» (Vaskov, 2003:119).

Intensification of space exploration and connected with it sharp increase of the number of launches of space objects lead to continuous growth of the quantity of 'space debris'. The quantity of debris on the orbit today of twice as much as in 1990 and since 2007 its growth has been 30%. Growth of the quantity of debris increases the probability of further impacts and, consequently, the risk for space activities. Expenses related to more often maneuvering of satellites to escape the debris, including increase of fuel consumption and shorter service life, create economic load for outer space users (UK Space Policy, 2014:10). There is also the threat of use of space debris to disguise targeted hostile actions of one state against space facilities of the other and knocking out its space information systems. All this affects not only interests of national security of the state, but also global safety on the

whole. Occurrence of new threats and growth of existing ones leads the humankind to understanding of the necessity of solution of this problem. However, it is possible only with joint efforts of the whole world community.

Development of the problem of 'space debris' was concentrated, mainly, in two agencies— *UN Scientific and Technical Sub-Committee on Space* and the *Interagency Committee on Space Debris*. In October 1979, in Johnson Space Center (USA) on the initiative of NASA, the first specialized subdivision for research on the 'debris' theme was created. The international community recognized the growing danger of space debris and urgent necessity of measures on prevention of its formation. In 1993, *Interagency Orbital Debris Coordination Committee (IADC)* was created. It is the most authoritative organization whose activity covers the entire circle of problems related to the space debris (Voeikova, 2014:6).

In December 1998, on proposal of the *European Space Agency*, the *World Commission on Ethics of Scientific Knowledge and Technology* of the UNESCO formed a work group on outer space ethics. The problem was set to formulate the ethical principles that must help politicians in making resolutions as regards space activities. On July 22, 2002, a relevant report was prepared. From recommendation given in it, a string, though non-legal, obligation of the states to use fixed ethical principles on each stage of the exploration and use of the outer space followed (Krutskikh, 2015:26).

Guidelines have been developed principles of the Committee on the Use of Space for peaceful purposes to prevent the formation of space debris, but they are not legally binding, and their implementation depends solely on good will of this or that state. To continue of the earlier work in this direction within the UN and other organizations there is a system of control measures activities on this issue, which includes the following areas: adoption of national standards, defining prevention requirements of space debris generation; adoption of international treaty documents aimed at limiting forming space debris; adoption of international standards defining requirements for space assets for the prevention of space debris; adoption of licensing of development organizations and operators of space-rocket products based on developed international standards in space debris and etc. The solution of this problem is complicated by lack of definition in international law the category of «space debris», as well as the fact that existing international documents in the field of space exploration do not have clear legal solutions

applied to the space debris, including in the part of international responsibility for the damage caused by them. (Tilvaldyev, 2017: 60).

The problems of the threat of pollution of the environment and the outer space were repeatedly discussed at international conferences. The *UN Millennium Declaration (Resolution of the Third Conference of the United Nations on Exploration and Use of Outer Space for Peaceful Purposes)* announced the strategy of solution in the future of a number of global problems, the use of the space technique for ensuring safety, development, and wellbeing of the human among them. The measure on solution of the set problem was determined, inter alia, as creation and/or strengthening of legal mechanisms providing proper development of space activities and participation of all interested sectors. Thereby, the world space community once again confirmed that the most operative and efficient solution of global problems is achieved through lawmaking of the states on the national, not on the international level (Bodin, 2012:74).

At the jubilee *United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE+50)*, held in 2018 in Vienne, it was noted that, despite the political disagreements on the Earth, the humankind managed to achieve a great progress in outer space exploration and also that UNISPACE+50 is the starting point for elaboration of a new approach to the space policy. The purpose of the Conference was to form long-term vision of the way of development of the world space activities, whose coordination center should remain the UN Space Committee. The key theme of UNISPACE+50 is the concept of global regulation of problems of safety in the space sphere.

The theme of space operations safety is also considered in the framework of the annual international conferences on space activities safety, whose organizer is *United Nations Institute for Disarmament Research*. In the course of the conferences, a wide circle of actual problems were discussed: problems and challenges of the modern space activities (cyberspace, use of the outer space for commercial purposes); national approaches of states to the problem of ensuring the safety of space activities; fundamental concepts in the sphere of space activities safety (including man-caused pollution of the near-Earth space with fragments of space debris); UN mechanisms in the sphere of space activities safety and initiatives of states in this area. On June 9-11, 2019, the Prague Security Studies Institute (PSSI) will convene in Prague the fifth event in its Space Security Conference series.

Previous PSSI Space Security Conferences were held in Prague (2011 and 2016), Tokyo (2013), and Washington, DC (2017). It will focus on the rapidly advancing threats to space operations and the role of space partnerships. The topics of this year's gathering will include space crisis management, private sector role in space security and etc.

The ecological problems of the Earth and the space are the important object of the world policy. They are actual in all regions of the world, and Kazakhstan is not exception. It is said in the Law of the Republic of Kazakhstan On Space Activities (2018) that it is necessary to carry on ecological control of the environment and the state of health of the population in the regions exposed to impact of space activities (Article 29). To provide ecological safety of the country, the Constitution of the Republic of Kazakhstan raised protection of the environment to the rank of constitutional principle: «The State set the goal to preserve the environment, favorable for life and health of the person». Hiding by officials of facts and circumstances threatening to people's life and health entails responsibility in conformity with the law» (Article 31 of the Constitution of the Republic of Kazakhstan). At the present time, more than 300 international treaties on preservation of the environment act. They provide both delicts responsibility for which is borne by the states, and international crimes of individuals, for example, pollution of the environment with radioactive and any other dangerous substances (Erkebaeva, 2016:11). «Garysh-Ecology» Scientific and Research Center (SRC) of the Aerospace Committee of the Ministry of Defense and Aerospace Industry of the Republic of Kazakhstan recommended for awarding the State Premium of the Republic of Kazakhstan in the area of space and technique acting development on ecological normalization of rocket space activities of Baikonur Cosmodrome. The essence of the system is in development and use of efficient methods of analysis permitting with minimum costs to collect great amount of exact data on the level and character of pollution in places of spill of rocket fuel. Altogether, the authors developed seven new methods of analysis, owing to which, more than 50 unknown before products of heptyl transformation were discovered in the objects of the environment. A group of scientists and ecologists also developed 9 new norms of maximum permissible concentration (MPC) for the most dangerous products of heptyl transformation in the soil. Occurrence of new MPC norms permitted not only to tighten control over soil pollution in the places of regular fall of rocket parts, but also to evaluate ecological damage in case of emergency fall of rockets (Sadyrova, 2017:1).

## Conclusions

Achievements in exploration and use of the outer space are one of the most indices of the country development level. The number of the states that lead their own research in the field of manufacturing satellites, launch vehicles, and developing space programs grows. International integration in the sphere of outer space exploration and inclusion of more and more states in the space community have become stable world tendencies. The processes of international integration in the space sphere are objects of legal regulation (Baitukayeva, 2017:45). «The second space race» has become the policy of new competition of great powers in the outer space. Projects of integration in the area of space exploration include attempts to achieve leadership in exploration of celestial bodies, strife to gain new military space technologies, develop projects of injection in the space of strike combat systems. The danger of conflicts in the space with the purpose of destruction of the navigation and communication systems, telecommunication technologies, infrastructure of strategic nuclear forces increases. In the conditions of practical absence of international legal limitations of space activities, space powers lead space experiments on workout of new technologies in the space. In connection with emerging of new kinds of space activities, new types of spacecrafts, the sphere of use of the results of space activities in solution of global problems of protection of the environment, ensuring of comprehensive international safety, and efficiency of the social, economic, and innovation development of the states have significantly increased.

International space safety today must become the policy aimed at strengthening of principles of cooperative use of the outer space for the peaceful purposes on the basis of practical measures on formation of the international global system of environment and space sphere safety control. It is necessary to provide not only active and rational use of the existing space potential of the world community, but also perfect and develop it by the way of consolidation of the national potentials in the direction of providing safety and stable development of the space activities. Space powers face the growing problem of space debris, from tiny paint spots to non-functional satellites, polluting the Earth's orbit. Without any actions, this debris can lead to the cascade called as Kessler's syndrome, which will destroy existing objects on the orbit and will make the space inaccessible (Muñoz-Patchen, 2018:233).

The problem of pollution of the outer space is increased, and each of the countries, at least, leading ones, tries to find its variants of solution. Such countries as Russia, the USA, Japan, and European Union possess their own systems of monitoring of the near-Earth space for analysis of the ecological situation and prevention of collisions in the space. Each system uses different methods of monitoring and exchanges the data with the others, which permits more operatively and efficiently take measures on prevention of collisions of active space apparatuses with space debris. It is necessary to legally formalize on the international level series of legally obligatory international treaties on joint works on cleaning and prevention of pollution of the near-Earth space. Meanwhile, there are no economically acceptable methods of cleaning of the space from consequences of its technogenic pollution. Debris left on numerous orbits around the Earth as a result of exploration and use of the space environment is a growing danger for future space operations.

Today there are no efficient methods of prevention of entry of space debris on the low earth orbit or its destruction. The search of solution of this global problem continue, remaining yet on the stage of development: giant metallic nets, space tow capable to clean the space from space debris, use of tungsten dust for cleaning the space, powerful laser installations destroying space debris completely, etc. Must more dangerous is further accumulation of space debris for launching space devices, since space flights may become just impossible because of the potential danger of impact of shuttles with fragments rushing with high speed and capable to punch the spacecraft skin, bring out of operation engines, and to cause significant harm.

The atmosphere of the Earth is a complicated system, influenced by a big number of factors. Observing satellites, flying around our planet, continuously trace the state of the air we breathe with and how natural and anthropogenic pollution affects the quality of the atmosphere. However, many open problems in the legal support of the safety in the sphere of the environment and space activities remain. As technical prerequisites for practical development of resources of the inter-planet space, the Moon, and some other celestial bodies are created, the need in preparation of special international treaties on the order and conditions of such activities arises. One of the most important at that is the problem of ensuring safety of exploration and research of celestial bodies. Also, one should enter into international treaties on issues of prevention of contamination of planets with

earthy microorganisms, prevention of ecobiological contamination of the Earth with microorganisms of extraterrestrial origin, constituting a danger for the life on our planet. Special attention should be paid to regulation of injection from the Earth of space devices with the use of nuclear installations, being of increased danger for the humans.

The importance of the task of ensuring the safety of space flights in the conditions of technogenic pollution of the near-Earth space and decrease of the danger for objects on the Earth is growing rapidly. That is why the international cooperation on the problems of ensuring of global safety of the Earth and the space is developed in the following high priority directions: mathematical simulation of 'space debris' and creation of information systems to forecast the near-Earth space pollution and its

danger for space flights; ecologic monitoring: overseeing 'space debris' and maintenance of the catalogue of 'space debris' objects; development and introduction of measures aimed at decrease of the outer space pollution. Since economically acceptable methods of cleaning of the outer space from debris have not existed yet, the principal attention in the nearest future will be paid to measures of control, excluding debris formation, such as prevention of orbital explosions accompanying flight of technologic elements, veer of used resources of space apparatuses to disposal orbits, spinning down in the atmosphere, etc. (Temirbekova, 2015:66). So, the problem of ensuring of safety of the Earth and the space will become one of the most global ones and will need uniting of efforts of all states within the nearest decades.

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