

# The Need for Establishing a New United Nations Body to Protect Earth from Back Contamination and Outer Space from forwarding Contamination

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**Abstract:** The purpose of the article is to explore the necessity to establish a new United Nations body, which is authorised to monitor and protect Earth and its organisms from biological contamination from extra-terrestrial sources and to protect outer space from forwarding contamination. Recent studies show that these contaminations could potentially have an extremely detrimental effect on life on Earth and for the safety of future outer space exploration. The study is doctrinal research and primary and secondary legal sources of international space law and environmental law are analysed. The research also applies a theoretical approach to determine what sets of principles should be applied and what institutional innovation is needed to achieve optimally the goals of improving safety standards. This article presents a proposal for establishing a specialized UN organ to monitor an international agreement for the international planetary quarantine protocol of Earth. The need of establishing a new body in the system of the UN for protection of the Earth's environment from harmful contamination caused by activities in outer space is quite distinguished. This publication aims also to increase awareness about the need for institutional innovation of the present UN system, particularly concerning global challenges like contamination from outer space and contamination of outer space. One of the major global challenges of today is the absence of safeguards for the protection of Earth from back contamination, an extra-terrestrial source of infection and destruction of space debris on the surface. The proposed new legal instrument would create guarantees for the protection of Earth and the outer space environment, support the adoption of a common space situational awareness system for monitoring and disclosing information about what is happening in outer space.

**Keywords:** Back contamination, International planetary protocol, New UN body, Contamination of Earth's environment, Contamination of outer space, Forward contamination.

## INTRODUCTION

Earth contamination with extra-terrestrial microorganisms, which are new for the Earth biosphere, is a real threat to the safe existence and health of all biological species on our planet, including all human beings. The issue requires adequate international legal regulation, which is capable to avoid spreading a dangerous disease from outer space and improve the international and national procedures to avoid back contamination. This article focuses on shortcomings of the current international legal regime in protection from forward and back contamination and presents a proposal for a new United Nations (UN) institution, which is capable to protect the interest of humankind and has the expert capacity and legal jurisdiction to prevent harmful biological contamination from outer space. The article explores whether the threat of harmful contamination is real and recognized by leading international scientific organizations and by states. It analyses the contemporary international legal mechanisms to avoid such contagion from outer space and how adequate are they.

The topic of contamination from outer space was firstly introduced for discussion in the forum of the Committee on Space Research of International Council of Scientific Unions (COSPAR) by the microbiologist Joshua Lederberg in 1958, just several months after the launch of Sputnik and the official beginning of outer space exploration. During these discussions, it was decided that the International Council should create an ad hoc committee on contamination from extra-terrestrial exploration (CETEX). In a report, the committee concluded that in regards to the exploration of Venus and Mars the main danger is from biological contamination (Bulletin of Atomic Scientists, 1959). The committee made a recommendation that it is of crucial importance the space crafts to land when all precautionary measures have been taken, to avoid the existence of living organisms on them. CETEX also made a recommendation to adopt a code of conduct for space research (Report of CETEX II, 1959).

Presently, COSPAR guidelines for planetary protection are part of the soft law body of legally non-binding norms and this lack of legal obligations creates risks for all living beings. In respect to forwarding contamination, it is prevented primarily by sterilizing the spacecraft. Such an obligation again is not legally binding for all states and private organizations.

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The fact that a specific committee was established shows that the international scientific community was identifying in a very early stage the potential threat of biological and other types of contamination during space activities. Despite that fact, there are no significant international legal steps, which are capable to guarantee adequate approach with this global threat. Profitiliotis, G., & Loizidou, M. (2019); Board, S. S., & National Research Council. (2006).

## LITERATURE REVIEW

According to the studies done in this field (Hobe, St., 1991), this norm does not provide the necessary regulation to avoid spreading contamination and alien disease on Earth for the following reasons:

*Firstly*, there isn't an international legal definition of harmful contamination and adverse changes in the environment. As a consequence of the lack of definitions and legal interpretations, every launch and intentional destruction is considered as legally allowed in outer space and it does not provide any concrete international legally binding norms to regulate forward or back contamination during space activities. Presently, there are no international legal procedures adopted to avoid contamination from outer space. There are no substances or biological entities, which are prohibited to be on space systems during launch or during the return of a space object.

*Secondly*, there are no guarantees whatsoever that states will disclose information about interaction with extra-terrestrial matter. Because those many leading space-faring states are willing to develop "improved" biological weapons as part of their national security policies, disclosing information about the discovery of extraterrestrial biological organisms is not likely. We can safely conclude that, if there was such a discovery, there is a strong probability that such information would not be introduced to the public and it would remain classified by the respective state. If a back contamination crisis is going to be used as a biological warfare tool, the result could be a humanitarian disaster of immense proportion.

*Thirdly*, even if all states ratified the Outer Space Treaty, the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, London-Moscow-Washington, D.C., 27.04.1968 (GA of the UN, Resolution 2345 (XXII), 19.12.1967) (hereinafter "The Rescue Agreement") and the Convention on

International Liability for Damage Caused by Space Objects, London-Moscow-Washington, D.C., 29.03.1972 (GA of the UN, Resolution 2777 (XXVI), 29.11.1971) (hereinafter "The Liability Convention"), in a situation of biological contamination to territories, which are not, sovereign, such as the high seas, there are no obligations for any state or international organization to protect these territories. They can be contaminated with an alien biological organism and cause a serious threat to the whole world environment. The defect of this definition is the absence of the word "environment" as the object of harmful impact by space activities. Race, M. S. (1995).

*Fourthly*, even if all states are bound to the treaty and have ratified it, there are no legal guarantees that states will cooperate and coordinate their efforts to protect the Earth's environment, humanity, and other biological species. What would happen if a state refuses to adopt appropriate measures to avoid adverse changes in the Earth's environment? The threat of back contamination is going beyond the borders of the state and presents an above-national planetary challenge for all life forms. This is a global challenge for humanity of mass proportion. The UN Environment Programme (UNEP) emphasizes the fact that because of growth in both human population and economic activity there is a loss of biodiversity, and over 99% of the species that have ever existed in our planet are now extinct and also a quarter of the Earth's total biodiversity is in danger of extinction during next years (UNEP, 1992). As mentioned above, states are acting in pursuit of their national interests which presently are predominantly in competition with national interests of other states.

All of the above illustrates that the current international legal mechanisms are becoming incapable to reply to the existing global threats to humanity, including back contamination from outer space. Significant efforts to avoid spreading certain diseases and to establish an international quarantine procedure have been made by the World Health Organization (WHO, 1951). The adoption of international quarantine rules and procedures by WHO for more than 50 years about other threats provides many good practices. However, in situations of outer space contamination, this international organization is not authorized to react on the ground and take all necessary measures to avoid contamination from outer space and in outer space. WHO is also not authorized to receive information about space systems and their cargo. This or any other international organization does

not have the authority to ban the use of certain biological organisms in outer space or to conduct an inspection of a space object before the launch or after landing to Earth.

Another example of an obstacle in modern international law is that only states have jurisdiction over their territories where the space object can land or crash. Knowing that every state pursues its national interest, it is safe to assume that if there is biologically dangerous cargo in the space system that has landed on the territory which is foreign to the launching state, the last might not request the returning of the space object. This is because the launching state will bear absolute liability for all damages which have resulted from the landing of the space object (Art. II of the Liability Convention). It should be taken into consideration the fact that during a crash of a space object, it is very likely that the object will be unidentifiable. More than half of the space debris on Earth are unidentified by the UN Office for Outer Space Affairs and are written in a column "believe to be" (UN Office for Outer Space Affairs, 2019). This means that the liable state is interested in not sharing information about its space object to avoid bearing international liability and paying compensations for all direct and indirect damages that occur. If the space debris is biologically contaminated with dangerous viruses, this means that information about the threat will not be shared and this could lead to disastrous biological contamination for all life on the planet. Morris, H. C., Monaco, L. A., Steele, A., & Wainwright, N. (2010).

It is an absolute necessity that detailed information of all space objects in outer space is being gathered and disclosed to states, private actors and to the public, to avoid back contamination and forward contamination. Presently, most space-faring states or private corporations are unwilling to provide such information, because of national security concerns or the protection of corporate secrets.

The Convention on Registration of Objects Launched into Outer Space, New York, 14.01.1975 (GA of the UN Resolution 3235 (XXIX), 12.11.1974) (hereinafter "The Registration Convention") stipulates only the obligation to provide initial coordinates for space launch but not the change of orbit of the space object. Additional information may or may not "from time to time" be provided by the launching state about space objects. Another concern, rising from the norms of the Registration convention is that information about the content of the national registry of launching space

objects is provided voluntarily and at the discretion of the launching state.

## METHODOLOGY

The current international legal framework, set by the UN outer space treaties, is incapable to respond fully to the current threats and to future potential dangers, which are related to contamination of Earth with alien biological organisms and contamination of outer space with Earth's biological organisms.

The prevention from biological contamination on Earth is possible only if our planet is safeguarded against the penetration of dangerous alien organisms, which could enter the lower layers of Earth's atmosphere during the returning of a space object. This object could be a space system, which ended its mission and is returning, or a meteoroid, or space debris, or another space object.

In art. IX, second paragraph, of the Outer Space Treaty is stipulated that there is an obligation for contracting states to develop their activities in outer space "as to avoid ... harmful contamination and also adverse changes in the environment of the Earth". The title of the Outer Space Treaty and especially the use of the word "principles" in it can raise the question: could be interpreted this rule as a legal principle, according to this treaty?

The problem of the legal essence of legal principles is very debatable in the doctrine of the general theory of law. One of the most debatable questions is related to their character as a kind of norm. The authors in this field could be differentiated into two groups. The first group considers that legal principles are a special kind of legal norms, i.e. legal norms-principles, but the second consider that the legal principles are mainly guiding ideas, but not legal norms (Penchev, G., 2017). The authors of the present research share the first of the abovementioned concepts, i.e. on legal principles as a special kind of legal norm. In comparison with another kind of legal norms, which we conditionally can designate as "usual legal norms", legal norms-principles are formulated in a more general way, for example: "polluter pays", "prevention of pollution at source", "rational use of natural resources", etc. They determine the direction of legal regulation, and also can be used in the interpretation of "usual legal norms", in solving a conflict between that usual legal norms, and finally, they have a normative function (Stoilov, Y., 2018). That is why their role in legal regulation on a

national, regional, and international level is very important. In comparison with legal principles, so-called "usual legal norms" are more concrete on the determination of rights and duties of legal subjects. That is why, in the light of a general theory of law, the title of the Outer Space Treaty is not correct because of the inclusion of the word "principles" in it. This treaty includes only usual international legal norms, related to the activity of states in outer space, but not legal norms-principles. In the text of this treaty, there are not adopted legal norms edited like "peaceful use of outer space", "polluter pays", etc., formulated and enumerated abstractly in a separate provision. That is why the title of this treaty should be changed and be focused only on activities of states in outer space, and the word "principles" should be excluded from its title.

### **National Measures in the USA**

National measures alone which have already been taken by the leading space-faring nations also cannot guarantee the protection of the entire Earth and its species from biological contamination. States stand on a different level of scientific and social development and many nations have not developed adequate procedures for reaction in case of back contamination from outer space. Consequently, even if developing states allocate resources to respond to the threat, they most probably will not be capable to react in the best way to resolve the situation, because of the lack of technical capacity, advanced laboratories, and highly trained personnel.

There are no legal guarantees that states will inform other states, UN Secretary-General, or any other international organization about back contamination. A declaration, even in a legally binding treaty, is not a sufficient guarantee of cooperative efforts of all states.

This is a clear sign that the leading space-faring nation is recognizing the danger of this type of contamination. The committee includes the National Aeronautics and Space Administration (NASA) and several state agencies among which are the department of agriculture, department of health, department of internal affairs, and national academy of sciences.

One of the major aims for establishing the committee is to guarantee the safety of astronauts, in particular, those who are participating in the lunar missions "Apollo". To prevent biological contamination, both forward and backward, during US missions, it was introduced a national quarantine protocol.

A great problem with the legal regulation of this quarantine protocol or any other national document of any state, related to quarantine procedures, is the lack of requirement the general principles of these documents to be made public. If the protocol is not public, there is a risk of unauthorized placing under quarantine of humans and properties and this could lead to a violation of human rights (Robinson, G. S., 2005).

Until July 1969, before the mission of Apollo 11, NASA has not published its rules for placing under quarantine when space activities are performed (Sreejith, S.G., 2019). Presently, there is no legal obligation for NASA or other space agencies to publish these rules.

It is unacceptable, the preservation and health of all living biological organisms of Earth to be dependent on the national security interests of any state. It is because most of the nations are willing to use any crisis as a political opportunity to gain an advantage against their competing nations in the process of which the interest of humankind is disregarded.

The absence of international legal norms which include common quarantine protocol of Earth and safeguarding procedures for every state is because there is no efficient international cooperation on that matter, at least publicly known. Every nation adopts its protocol under its jurisdiction. International cooperation and coordination are at a very low level on this issue. If a spacecraft landed in the territory of another state and the authorities of the last do not follow adequate procedures for the protection of back contamination, this represents a danger for the dissemination of disease on Earth, respectively to the interest of humankind.

Due to the reasons mentioned above, it could be concluded that the most suitable way for resolving potential back contamination crises is by adopting international planetary quarantine protocol of Earth, which should be implemented by a UN authority, which acts professionally and is capable to consult and guide states and private actors on these matters. National measures are undertaken according to the national interests of a certain state, which are not always in the interest of humankind. Other examples of such discrepancies are saving of investments for scientific developments, classifying of information of space objects, and not publicly introducing of events that are occurring in outer space. In the national interests of

some states could be a perfectly acceptable spreading of infection and reducing the population of other states.

## RESULTS

Every quarantine protocol includes actions of detention, examination, and decontamination for an unspecified period, which are directed towards people, and property. The protocol is applied because of the assumption that they might be a source of infection, which is presumably harmful. The adoption of the international planetary quarantine protocol of Earth aims at protecting human rights and at the same time approaching the threat of infection with dangerous microorganisms with the highest possible level of expertise.

### **The Need of New International Body for Protection of Earth's Environment from Impact of Activities in Outer Space**

The need of establishing a new body in the system of the UN for protection of the Earth's environment from the harmful impact caused by activities in outer space is quite distinguished. The branches of International Space Law and Environmental Law are weakened by the inefficient results of the implementation of the abovementioned multilateral treaties in this field and the lack of well-edited international legal norms, which are capable to guarantee the interests of humankind.

There are several structural possibilities to improve the system of the United Nations.

The first of them is the establishment of an organization, which is with broad jurisdiction, legal power, and coordination functions. This new body shall unify several of the existing UN bodies in the field of outer space exploration – COPUOS, UNOOSA. This organization could be entitled the International Space Organization. This new organization will introduce common international standards, modern international agreements, including international quarantine protocol and procedures, related to the protection of biodiversity from back contamination and forward contamination.

The second option is to establish a specialized body in the UN system, which shall be responsible only for the protection of Earth and outer space from biological contamination. This organ could be named the UN Agency for Protection of Earth's Biodiversity (UNAPEB). This international body should have more broad competence in the decision-making of obligatory rules, (e.g. binding guidelines, protocol on biological

safety, on the protection of high seas and other territories out of national jurisdiction, during outer space activities, etc.) for UN member states, especially in the field of Earth's environmental protection.

Both approaches for institutional improvement are related to better coordination efforts among states, the obligation for consultation with the respective experts, education and capacity building of national personnel, improvements in the collection, and dissemination of information.

## CONCLUSION

The international collaboration for the protection of Earth's environment from the harmful impact of activities in outer space can be described as inefficient in the light of the implementation of the abovementioned universal international treaties. The last could not guarantee the interests of humankind because of the following reasons: a) lack of definition of the term "harm contamination" in the Outer Space Treaty; b) not well-edited definition of the term "harm" in the Liability Convention where is the lack of showing of "environment" as an object of harmful impact; c) not well-balanced and inefficient rules on international liability for environmental harm also in the Liability Convention. This study can be used by academicians, world leaders, UN personnel, university lecturers, students, and teachers. The study depicts the necessity of global awareness regarding contamination from the outer space.

Establishing a new international body in the system of the UN with more broad competence in the decision-making of obligatory rules for the UN member states in the field of the protection of Earth's environment from contamination, caused by activities in outer space must be as soon as possible.

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