

**LUNAR ENVIRONMENTAL MANAGEMENT- ADDRESSING A POLICY LOOPHOLE.**

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**ABSTRACT:**

Since the early years of the Space Age, the Outer Space Treaty of 1967 has effectively guided exploration and research in ways that have avoided the harmful contamination of other worlds. For over four decades, planetary protection policy formulated by ICSU's Committee on Space Research (COSPAR) has provided guidance for exploring the solar system and preventing biological contamination of planets, moons and other celestial bodies. Recently, there have been calls for reexamination of COSPAR's policy to determine if "ethical implications" should be integrated into the planetary protection policy along with science protection. Support has grown within the international scientific community for an international workshop to examine the issues and implications of integrating ethical considerations into policy (e.g., preservation of planetary environments). Until now, the emphasis on policy guidance has focused mainly on avoiding contamination that would interfere with exploring for evidence associated with the origin or existence of extraterrestrial life. These international calls for integrating ethical considerations, coupled with recent interest in lunar exploration and activities have raised new questions regarding the need for future policies or guidelines for celestial bodies both with and without possible extraterrestrial life.

Based on the extensive studies of lunar samples and environments during and after the Apollo program, concerns about protection of the moon from biological contamination are minimal. However, recent plans for expanded exploration and research on the moon have highlighted the need to consider what comprises appropriate environmental management and stewardship for bodies without extraterrestrial life. Not only are the types of planned scientific activities increasingly diverse, there are a host of potential contamination concerns from associated activities (e.g., construction of bases, in situ resource utilization (ISRU), EVAs, infrastructure, waste disposal, etc) as well as from proposed private sector plans (e.g., private spacecraft missions, strip mining, tourism, astroburials, etc). In the not-too-distant future one can easily imagine the prospect of competing or conflicting lunar uses by diverse science disciplines, international space agencies, and commercial ventures of all types.

Since outer space is officially designated a resource for humankind, it is appropriate to deliberate soon on what policies or guidelines should be developed to ensure effective lunar environmental management. Lessons learned from the Antarctic Treaty System may be instructive in helping to frame the discussions and deliberations ahead. In addition to considering a code of conduct for human activities on the moon, it may be important to develop a review process for the evaluation of proposed major operations. For example, it may be advisable to analyze the environmental impact of a proposed activity in advance in order to assess the potential benefits of the activity, the possible impact on the relevant lunar environment, and the alternative actions or mitigation that should be adopted if the impacts are more than minor or transitory. Considering that future scientific, government, and private sector activities may be international in scope, it is appropriate to find a process that encourages cooperative reviews before possible irreversible environmental damage occurs.