

## Ways to Reduce Space Debris; To Make a Brighter Future

SDG's are now known widely in international society as a critical environmental problem.

However, not only the earth, but also space has an important environmental problem. Since humans have been exploring space, we have also been causing a bit of a mess. "Space debris" is a piece of machinery or metal fragment left by humans in space. They were originally parts of satellites but have fallen apart for some reason. For example, crashing into another satellite or a planet. Space debris is an international problem, if it increases it may cause artificial satellites to crash, fall to the earth; However by promoting removal of satellite debris, or make guidelines on space debris reduction, it can be reduced.

According to NASA, there are more than 5,000,000 pieces of debris in space. At least 20,000 of those objects are larger than a softball. The ability to reduce the amount of space debris, more simple and light satellites are recommended. Using simpler designs and materials with far less mass and structural strength might make the satellite look quite different from the normal satellites but not only it can reduce the amount of debris but also can be free from the impact of the gravitational forces during launch (Brooks Mckinney 2019). A more innovative method that reporter Jonathan O' Callaghan says is to drag dead satellites back from orbit into the atmosphere where they will burn up. Ways to do this would be by using a harpoon to grab satellites, catch it in a huge net, using magnets to grab it, or even firing lasers to heat it up. However, these methods are only useful for large satellites. There is really no way for humans to pick up smaller pieces. The only way for them to disappear is to wait until they naturally re-enter the atmosphere. Many scientists are working hard on researching ways of reducing space debris, so there must be a perfect way of reducing it.

After collecting the debris, the next issue is that what to do with it. Therefore, some ways to recycle space debris is researched. According to John Swanepoel, by repairing or recycling satellites and space debris at a facility in Earth's orbit, this material could help build future spacecraft or exploration outposts. Using debris that are already floating around means there are no material launch costs and using those resources will reduce space junk (2019 July 26). Also some debris are transported to the moon for a huge project. When the debris are tugged to the moon, all of them are deposited at a central place where rovers can recover all of it. They are liquefied by concentrated sunlight, which liquefies any metal. Wall segments

would be cast which would be used to build the first “Moon Station” (MRT 2021 August 26).

There are more measures to reduce space debris. First, when satellites degrade and gradually disassemble, there is an international rule to throw away all the fuel after using it. In order not to break the satellite. Second, if so many satellites are launched the outer space around the earth will be narrow and some satellites might collide. Therefore, by asking them to report the orbit of the launched satellite, keeping in touch with the station which tracks the satellite in the US and if it is about to collide. Then move the orbit of the satellite a little to reduce the possibility of collision. Also, the UNCOPUOS has approved and recommended the “Guidelines for reducing space debris” to prevent the occurrence of space debris.

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Space debris is now still continuing to increase. There are many methods to reduce them so we need to make the most and change little by little. There is nothing that ordinary people can do directly but if children know about these problems and become interested in it, maybe more new ideas to solve the problem will be discovered. Therefore, spreading information about space debris is what ordinary people can do. However, first of all it is essential to know about space debris oneself. Then tell it to friends, families and maybe even neighbors. Let's share knowledge about space debris and get closer to the solution as promptly as possible.

## References

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