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Space junk, also known space debris and space waste, is the collection of objects in orbit around Earth that were created by humans but no longer serve any useful purpose, which can consist of everything from old dead satellites to explosion and collision fragments. These objects often overlap the trajectory of new space shuttles or satellites, which can cause a potential collision risk, damaging the equipment.

Space junk presents a threat not only to space affairs, but also to matters here on earth; although most debris will burn up in the atmosphere, larger objects can reach the ground intact and present a risk. The ISS has had to repair numerous satellites and spaceships orbiting the earth due to the damage caused by space junk, causing them millions. Though the UNOOSA has published guidelines for nations to follow in hopes to reduce the amount of space junk, the UN still has many issues that need to be discussed and covered due to this growing problem. . Nations that are directly involved and affected by this issue include the USA, China, France, Germany, India, Italy, Japan, the Russian Federation, Ukraine, the UK, and others.

According to the U. S. military's Space Surveillance Network, there are roughly 22, 000 pieces of orbital debris larger than 4 inches currently in the outlying atmosphere, which include broken satellite parts and depleted rocket bodies. As these fragments travel through space, they pose collision risks to the ISS and the roughly 1, 000 working satellites in orbit.

Many incidents have already occurred, such as in February 2009, a U. S satellite was struck by a non-operational Russian satellite. The impact destroyed the two spacecraft and created large clouds of dust and debris. “ If we continue, as we have, to use these very popular orbits in near-Earth space, the density of debris and collision events will surely increase," Marshall Kaplan, an orbital debris expert within the Space Department at the Johns Hopkins University Applied Physics Laboratory in Laurel, told SPACE. com. Operational satellites will be destroyed at an alarming rate, and they cannot be replaced. We must prepare for this seemingly inevitable event," Kaplan said. B. United Nations Involvement 1. Analysts first became aware of an emerging space debris problem in the early 1960s. However, February 2009 was when the UN first really got involved with this issue. The UNOOSA “ called all Member States and international organizations to fully implement measures to curb space debris following the collision of an inactive Russian satellite with an operational one from the USA. This was the first major problem between countries regarding this issue. 2. Some organizations, committees, agencies, and NGOs that are involved with the growing issue include the United Nations Committee on the Peaceful Uses of Outer Space, the United Nations Office of Outer Space Affairs, the European Space Agency, the National Aeronautics and Space Administration, and the Defense Advanced Research Projects Agency, and the Inter-Agency Space Debris Coordination Committee.

Every year, the COPUOS invites Member States to submit reports on national research regarding space junk and problems of collisions with space junk. Though there is no international treaty mandating countries to minimize space debris, in 2007, the United Nations Committee on the Peaceful Uses of Outer Space published voluntary guidelines for nations to follow. The UNOOSA needs to continue to pass more guidelines and rules regarding space junk, and agencies like NASA to be more aware of the debris and the issues they are emitting.

Many methods have been proposed to solve this problem, but in the end, the international community needs to step up and put forth more action before the issue gets worse. Sweden has set up a wide-ranging space company that has 40 years' experience in helping space organizations, companies and research organizations gain access to space, called the SSC, or the Swedish Space Corporation. This company has researched and developed numerous resolutions to many space problems, such as space debris. . Sweden believes that space junk in Earth’s atmosphere is a growing problem and is working to stop the damage it is causing.  On March 19th, 2012, Sweden, through the SSC, launched the Redemption Experiment at the Rexus/Bexus Esa Educational Programme, which is realized under a mutual agreement between the German Aeroscope Center and the Swedish National Space Board. Redemption stands for “ Removal of Debris using Material with Phase Transition IONospherical tests;” it is currently a work in progress.

In order to combat space debris and a possible, upcoming tragic event known as Kessler Syndrome, many research groups are developing technologies able to shift space junk into a safety orbit using a newly redesigned foam. Unfortunately, at the moment, a realistic system has not yet been found.  Sweden is still continuing to work towards the redemption experiment, whose main goal is to propose a new system based on a spray foam that solidifies.

This can be used as a link between satellites and debris and will have to work in space conditions – this will avoid future collision between debris and space equipment.

## Works Cited

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