



SPACE GENERATION  
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Space Law & Policy  
Project Group

## Space Debris Mitigation

### SGAC Task Force on U.S. Space Legislation

#### Summary

Space debris, or “space junk”, consists of non-functional, human-made objects in Earth orbit. According to the National Air and Space Administration (NASA) Office of Inspector General, there are currently over 100 million pieces of space debris, ranging from tiny pieces 1 mm in diameter that could puncture a spacesuit or damage equipment to far larger objects capable of destroying commercial and military satellites (NASA 2021). Reducing the proliferation of space debris is crucial to furthering the sustainable development of space in support of commercial and national security interests.

#### Hazards of Space Debris

Space debris proliferation is hazardous to both uncrewed and crewed spacecraft. Space debris can travel at speeds greater than 20,000 mph, so even collisions with tiny debris objects can seriously damage satellites or threaten human safety. In the past, astronauts aboard the International Space Station (ISS) preemptively transferred to ISS “lifeboats” when mission control determined there was a 1 in 360 chance that debris would hit the station (Chang 2011). And as the debris concentration increases, so too does the collision risk. In a worst case scenario known as Kessler Syndrome, a cascade of collisions creates a debris field so dense Earth orbit becomes inaccessible (Johnson 2017). These hazards posed by space debris collisions threaten America’s commercial and national security interests in space.

#### Current Regulations for Space Debris

Space debris management involves mitigating and tracking existing debris and preventing creation of new debris. Historically, space debris management authority has been split across multiple agencies. U.S. Space Command has been responsible for physically tracking space debris and sharing this information via the public repository [Space-Track.org](https://www.space-track.org). NASA focuses primarily on developing debris standards for its own launches. For commercial actors, space launches are licensed through the Department of Transportation's Federal Aviation Administration (FAA), remote sensing satellites are licensed through the Department of Commerce’s National Oceanic and Atmospheric Administration (NOAA), and satellite communication operators are regulated by the Federal Communications Commission (FCC). Space Policy Directive 3, issued in 2018, designates the Department of Defense as the lead agency for tracking space debris, the Department of Commerce as the lead agency for ensuring tracking data is publicly available, and NASA as the lead agency for developing guidelines to mitigate and reduce space debris (Space Policy Directive-3, 2018).

#### Conclusion

Space debris is a serious threat to a sustainable, safe, and economic development of space. It is crucial that the U.S. take decisive action by developing and implementing robust standards and regulations for space debris prevention, tracking, and mitigation.

## References

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