

*Orbiting Debris: A Space Environmental  
Problem*

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ORBITING DEBRIS  
A Space Environmental Problem

Background Paper



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# Foreword

Man-made debris, now circulating in a multitude of orbits about Earth as the result of the exploration and use of the space environment, poses a growing hazard to future space operations. The 6,000 or so debris objects large enough to be cataloged by the U.S. Space Surveillance Network are only a small percentage of the total debris capable of damaging spacecraft. Unless nations reduce the amount of orbital debris they produce, future space activities could suffer loss of capability, destruction of spacecraft, and perhaps even loss of life as a result of collisions between spacecraft and debris.

Better understanding of the extent and character of “space junk” will be *crucial* for planning future near-Earth missions, especially those projects involving humans in space. This OTA background paper summarizes the current state of knowledge about the causes and distribution of orbiting debris, and examines R&D needs for reducing the problem. As this background paper notes, addressing the problem will require the involvement of all nations active in space. The United States has taken the lead to increase international understanding of the issue but much work lies ahead.

In undertaking this background paper, OTA sought the contributions of abroad spectrum of knowledgeable individuals and organizations. Some provided information, others reviewed drafts. OTA gratefully acknowledges their contributions of time and intellectual effort. As with all OTA studies, the content of this background paper is the sole responsibility of the Office of Technology Assessment and does not necessarily represent the views of our advisors or reviewers.



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