In 2008, NASA asked the US National Research Council (NRC) to review the findings of the report, *Mars Sample Return: Issues and Recommendations* (National Academy Press, 1997), and to update its recommendations in the light of both current understanding of Mars’s biological potential and ongoing improvements in biological, chemical, and physical sample-analysis capabilities and technologies.

The committee established to address this request was tasked to pay particular attention to five topics. First, the likelihood that living entities may be included in samples returned from Mars. Second, scientific investigations that should be conducted to reduce uncertainty in the assessment of Mars’ biological potential. Third, the possibility of large-scale effects on Earth’s environment if any returned entity is released into the environment. Fourth, the status of technological measures that could be taken on a mission to prevent the inadvertent release of a returned sample into Earth’s biosphere. Fifth, criteria for intentional sample release, taking note of current and anticipated regulatory frameworks.

The paper outlines the recommendations contained in the committee’s final report, *Planetary Protection Requirements for Mars Sample Return Missions* (The National Academies Press, 2009), with particular emphasis placed on the scientific, technical and policy changes since 1997 and indications as to how these changes modify the recommendations contained in the 1997 report.