

Assessment of Perchlorate Releases **in Launch Operations II**

1 December 2002

Abstract:

Laboratory studies were conducted to determine the rates at which perchlorate is released from perchlorate-containing solid propellants and the influence of temperature and salinity on the rates. Perchlorate release rates from carboxyl-terminated polybutadiene (CTPB), hydroxyl-terminated polybutadiene (HTPB), polybutadiene-acrylic acid-acrylonitrile terpolymer (PBAN), and polyurethane (PU) solid propellants were determined and are reported as diffusion coefficients. The diffusion coefficients for all propellant types and conditions tested were in the range of 3.6×10^{-12} to 1.1×10^{-13} m^2s^{-1} . Modeling studies of solid-propellant debris impacts for Delta IV and Atlas V cases were also conducted using an improved methodology based on the ACTA debris model.