

SPACE PROPULSION SYMPOSIUM (C4)  
Propulsion concepts and studies (9)

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ENVIRONMENTAL STATUS AND PERSPECTIVE FOR RAW MATERIALS AND LIQUID  
PROPELLANTS**Abstract**

Some Raw Materials such as Ammonium Perchlorate for solid propulsion or MMH for liquid propulsion are vital regarding performance of final applications. There is only few producers in the world, these raw materials are submitted to export licences and it's strategic for space program to warranty their availability and the independency on them. Nowadays, during all life cycle of the product, from the start of elaboration to the end of life, producers and users have to take in consideration Health, Safety and Environmental regulations on the whole and their evolvments.

A focus on the SME (Safran group) Health, Safety and Environmental and industrial policies to insure the availability on these important products has been done during the IAC 2011, and will shortly be reminded here as introduction.

This paper will be focused on future perspective for liquid propellants, based on SME skills and capabilities for new molecule synthesis and production. This enables SME to propose a stepped roadmap, based on the availability of current propellant (such as MMH), then going to less toxic propellants (such as TMTZ) with first preliminary results already obtained, and paving the way to longer term "green" propellant solutions (such as ionic liquids with new molecules). These solutions could provide long term sustainability for mono and bi-propellant motors, with minimal modifications and lower operating costs.