

Web-based “Green” Munitions Analytical Compliance System (G-MACS)

A series of Executive Orders and DoD Directives has created a need for the military to develop “green” munitions – munitions that minimize effects on human health and the environment, but also can be more cost effectively demilitarized at the end of their life cycle. PEO Ammunition at Picatinny Arsenal and the U.S. Army Defense Ammunition Center (DAC) funded the implementation of the “Green” Munitions Analytical Compliance System (G-MACS) on the World Wide Web for utilization by PM-CCS, PM-CAS and PM-MAS. This G-MACS capability was an enhancement of a prototype system previously funded by DAC and three PMs and customized from the CCS “Green” Products Compliance Analytical System (GP-CAS).

The Web-based G-MACS qualitatively calculates the “greenness” of a munition and its components/parts/chemicals without delaying the development of new munitions. G-MACS includes a comprehensive set of weighted “green” criteria that encompass ecological, health, safety and regulatory impacts of munition chemical constituents. Total “green,” or criteria segment, scores can be quantitatively compared for an old and new munition to analyze their relative “greenness,” or the scores can be used to rank the “greenness” of a series of equivalent munitions (e.g., grenades, or munition parts [e.g., fuzes]). “Green” assessments can be performed for either the manufacture or demil phases of a munition life cycle. Although G-MACS was implemented to facilitate development of new “green” munitions, it will more frequently be utilized to analyze munitions in production to identify mechanisms to improve their greenness. Additionally, G-MACS analyses will be performed on MIDAS-characterized components/parts to create a “Green” Components or Parts Index. This Index will facilitate selection of “green” components or parts with higher “green” scores during the development of new munitions, or the improvement of munitions in production. MACS is currently “live” on the Web. Users who will benefit from the use of G-MACS include purchasing agents, design engineers, ammunition development contractors, environmental/safety/health professionals, program managers, shipping/transportation/storage personnel, and a variety of munition supervisors.