



Sustainable Painting Operations for the Total Army

Environmental Quality Technology Pollution Prevention Program

Purpose: Eliminate hazardous air pollutants (HAPs), volatile organic compounds (VOCs) and other pollutants from a variety of surface coating operations by reformulating and demonstrating alternative products. This program has saved the Army billions of dollars, eliminated health concerns and improved the technology available to the Warfighter.

Requirement: The Army requires the capability to perform surface coating operations on weapon systems as part of production and maintenance at government and commercial industrial facilities, motor pools, repair shops and in the field at troop installations. The U.S. Environmental Protection Agency (EPA), under the Clean Air Act, has promulgated regulations for the surface coating of aerospace vehicles and watercraft on Army installations as well as numerous regulations applicable to the commercial industrial base. These regulations limit the amount of HAPs that can be emitted by materials such as paints, sealants, cleaners, thinners and paint removers. The EPA has also begun developing a regulation specific to military ground systems, and most legacy Army coatings would not meet the projected HAP limits.

Technical Approach:

- Create HAP-free Chemical Agent Resistant Coating (CARC) and non-CARC paints with improved durability, corrosion resistance and camouflage performance
- Develop HAP-free adhesives, sealants and ammunition coatings, and implement them by consolidating the requirements of multiple outdated military specifications
- Demonstrate HAP-free chemical and mechanical paint removal alternatives to eliminate the vast majority of methylene chloride used by the Army
- Eliminate trichloroethylene from vapor degreasing processes and prepare new specifications to implement HAP-free cleaners for other applications, including hand-wipe cleaning

Benefit to the Warfighter:

- Avoided \$1 billion in future compliance/recordkeeping costs at 40+ Army depots, plants, arsenals and installations by reformulating materials instead of installing expensive air scrubbers on paint booths under anticipated EPA regulation
- Developed, demonstrated and implemented 30+ types of alternative, HAP-free surface coating products affecting 1000+ National Stock Numbers used on Army and other DoD weapons systems
- Reduced HAP emissions from painting of land-based DoD systems by roughly 2/3 (5 million lbs/yr), prompting EPA to remove the anticipated regulation from its regulatory agenda and saving Army installations even more money in avoided recordkeeping and reporting costs
- Revolutionized the CARC camouflage paint system and all associated materials to provide enhanced durability and survivability to the Warfighter while reducing health and safety risks to workers during production and maintenance
- Solely responsible for achieving all three of the Army-wide toxic chemical reduction goals mandated by the Assistant Secretary of the Army for Installations, Energy and Environment under Executive Order 13423



Previous methods of depainting and vapor degreasing used carcinogenic chemicals



HAP-free CARC and other SPOTA products are used on nearly all Army systems

Successfully Transitioned Products:

- CARC topcoats: MIL-PRF-22750, MIL-DTL-53039 and MIL-DTL-64159
- CARC primers: MIL-DTL-53084, MIL-DTL-53022 and MIL-DTL-53030
- Powder coatings: MIL-PRF-32348
- HAP-free immersion depainting and vapor degreasing at Anniston Army Depot
- HAP-free cleaners: MIL-PRF-32359 and MIL-PRF-32405
- General adhesives: MMM-A-121