



SMOKE AND DYE REPLACEMENT

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The U.S. Army Environmental Command (USAEC) leads and executes environmental programs and provides environmental expertise that enables Army training, operations, acquisition and sustainable military communities. USAEC supports the Army's mission of readiness and training by consistently integrating environmental compliance into all aspects of base operations; and promoting the well-being of Soldiers and Family members, civilian employees, and citizens of neighboring communities. Although USAEC's programs vary in subject matter and scope, each program is dedicated to furthering the Army's mission through environmental sustainability.



The Department of Defense (DoD) is currently facing increased regulatory enforcement with regard to munitions production and emissions from munitions used during military training and testing operations. As a result, the U.S. Army Environmental Command (USAEC) collaborated with Pine Bluff Arsenal (PBA), Dugway Proving Ground (DPG), Edgewood Chemical Biological Center (ECBC), the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), and the PM Close Combat Systems (PMCCS) to develop an innovative program to address the smoke and dye used in Army pyrotechnic training munition items.

Funded by the Environmental Security Technology Certification Program (ESTCP), the – smoke and dye – program identifies emissions resulting from range operations that involve smoke and pyrotechnic devices and exploding ordnance while assessing the environmental impacts and health risks resulting from their use. As part of this effort, two colored signal smoke devices, the M18 red and violet smoke grenades, were identified as munitions that contain and emit toxic smokes and dyes in significant quantities. Although these signaling devices are critical to training and combat operations, it was determined that it is in the best interest of the Army and the DoD to demonstrate

For more information

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and implement a material substitution for the dyes and smokes contained in these munitions items.

Under this program, PBA identified alternative materials for the munitions items, including sugar-based fuels and a reformulated, and less toxic, dye mixture. Pilot and production quantities of the M18 red and violet smoke grenades were produced and tested at PBA. The new smoke formulations must meet military standard criteria, which includes a color comparison, and emissions, inhalation, and toxicity tests. The new red and violet smoke grenades met the technical needs; however, the dye combination in the red grenades may need to be adjusted to meet the visual requirements of the military community.

Under USAEC's Emissions Characterization Program, final grenades were tested for emissions at DPG in 2004. The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) has conducted toxicity testing for the violet smoke grenade and the violet smoke. A Final Technical Report and a Cost and Performance Report were written in 2005 with publishing in 2006. The data collected from the toxicity testing was included as an update and an appendix to the Final Technical Report.

