

Weapons Systems and Platforms



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Research and technologies to reduce, control, and understand the sources of waste and emissions in the manufacturing, maintenance, and use of weapons systems and platforms.

Department of Defense (DoD) Need

DoD owns and operates hundreds of major industrial facilities that manufacture and repair the military equipment, weaponry, and munitions needed to protect and defend the nation. This includes more than 12,000 aircraft, 10,000 tanks, and hundreds of ships. The manufacture, maintenance, and operation of these systems generate hazardous waste, emissions, and noise that impact workers, the environment, and surrounding communities. DoD is committed to increasing the sustainability of its weapons systems to minimize environmental impact while maintaining performance to protect the troops.

SERDP and ESTCP's Strategic Investments

SERDP and ESTCP's Weapons Systems and Platforms program area is developing and demonstrating innovative technologies that enable DoD to reduce or eliminate the use of hazardous materials in its production and maintenance processes, reduce hazardous waste streams, and better understand and mitigate emissions and other environmental impacts that result from its operations. Specific areas of investment are listed below.

- **Surface Engineering and Structural Materials** - Coatings; sealants; adhesives; surface cleaning; non-destructive inspection; coating removal; composites, alloys, and ceramics; welding and joining technologies.
- **Energetic Materials and Munitions** - Pyrotechnics; rocket and missile propellants; explosives; ammunition and projectiles; emissions associated with munitions use and demilitarization.
- **Noise and Emissions** - Noise prediction, monitoring, impact assessment, and reduction efforts; science, prediction, and measurement of air emissions associated with gas turbine engines.
- **Fuels and Greenhouse Gases** - Measurement and prediction of the impacts of alternative fuels on air emissions; evaluation and assessment of the use of bio-based fuels in tactical vehicles; evaluation of the effectiveness and benefits of using alternative propulsion methods in vehicles.
- **Waste Reduction and Treatment in DoD Operations** - Shipboard wastewater treatment; deicing and anti-icing technologies; treatment of wastes from manufacturing and maintenance; solid waste reduction in forward operating bases.
- **Lead-Free Electronics** - Quantitative and mechanistic understanding of the role of lead in inhibiting whisker growth; tin whisker risk mitigation; lead-free alloy reliability assessment.

Innovative Environmental Solutions

SERDP and ESTCP investments in science, engineering, and technology help to improve the environment and sustain military readiness. Our researchers have made many distinguished contributions to environmental science and technology. Practical application of these findings provides solutions to the complex challenges of ensuring responsible environmental management while meeting critical military missions. Learn more about our investments and products at www.serdp-estcp.org.

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