

PROBLEM STATEMENT

REQUIREMENT TITLE: Critical Chemicals for Defense

CRITICAL SECTOR: Kinetic Capabilities

BACKGROUND: Chemicals are essential for the proper functioning of defense systems as part of energetic formulations that go into explosives, propellants, and pyrotechnics. The Department of Defense (DoD) needs a robust supply of chemicals to maintain defense readiness and enable the Services to innovate and apply more sustainable solutions for national security. In support of this mission, the Manufacturing Capability Expansion and Investment Prioritization (MCEIP) office is looking to invest in onshoring production of critical chemicals for the defense industry that are being sourced from foreign (often adversary) nations.

Many of the chemicals listed, or their precursors, have applications in commercial markets, including but not limited to, agriculture, pharmaceuticals, energy, automotive and aerospace, consumer goods and packaging (e.g., food and beverage, cosmetics, etc.), electronics and appliances. Therefore, this funding opportunity will not only secure chemical supply for the defense industry but will also improve America's supply chains and contribute to strengthening the Nation's economy.

DESIRED OBJECTIVE: The MCEIP office is seeking chemical suppliers to create a more resilient industrial base, increase domestic capacity, increase competition, and thereby drive down cost.

Offerors must be able to demonstrate technical and manufacturing feasibility of establishing a commercially viable prototype production (i.e., pilot) line of as many chemicals as possible from the list provided below and their precursors. The resulting prototype production line(s) must meet the criteria for Technology Readiness Level (TRL) 6 or above, with TRL 6 defined as "system/subsystem model or prototype demonstrated in relevant environment."* A successful pilot production line will demonstrate development of synthetic routes for the listed chemicals that can subsequently scale to desired quantities (Appendix A which contains Controlled Unclassified Information (CUI) will be provided at a later date on the DIBC members-only site) and produce chemicals that meet the performance criteria as defined in the most recent active version of the Military Specification (MIL-SPEC). When no active MIL-SPEC exists, an alternative (i.e., commercial) specification shall be utilized.

Offerors can propose precursors of the chemicals listed below even when such chemicals are not included in the list, provided they demonstrate that the synthetic routes proposed are viable and scalable.

- Dibutyl Sebacate
- Dioctyl Sebacate
- Copper (I) 5-nitrotetrazole (DBX-1), and its precursors:

*per the DoD R&E Technology Readiness Assessment Guidebook, dated June 2023
<https://www.cto.mil/wp-content/uploads/2023/07/TRA-Guide-Jun2023.pdf>

- Sodium 5-nitrotetrazole (NaN_T)
- Aminotetrazole nitrate (Procten)
- 5-Aminotetrazole
- Bismuth trioxide
- Triphenyl bismuth
- Benzylamine
- Glyoxal
- Tetraacetyldiamino Hexaazaisowurtzitane (TADA)
- Oxamide
- Isophorone Diisocyanate
- Hexamethylene Diisocyanate
- N-100 (curative agent)
- N-3200 (curative agent)
- 4-Chloronitrobenzene
- Charcoal
- Barium Peroxide
- Barium Carbonate
- Cesium Nitrate
- Amorphous Boron (Powder)
- Methyl Aniline
- Ethyl Aniline
- Colored Smoke Dyes and Precursors
 - Quinizarin: Tech and Sublimed
 - Leucoquinizarin
 - Quinaldine
 - Nitroanthraquinone

ANTICIPATED FUNDING: Multiple awards are projected with individual project agreement funding estimated between \$1M - \$24M over the next five years, subject to future Government availability of funding. Proposed solutions are subject to negotiation, if selected for award.

ANTICIPATED SECURITY LEVEL: Classified information up to and including secret.

ESTIMATED PERIOD OF PERFORMANCE (POP): Up to five years

ANTICIPATED DATA RIGHTS: Government Purpose Rights (as appropriate for any data developed using government funding)

TECHNICAL POC/s: Designated technical SMEs for Army, NASA, Navy, Missile Defense Agency, Space Force, and Air Force will be provided upon selection for award.