



Securing the Future: Strategic Investments in Critical Chemicals for National Defense



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DEFENSE PRODUCTION ACT OVERVIEW

(50 U.S.C. 4501 *et seq.*)



- The *Defense Production Act* (DPA) authorizes the President to ensure the availability of domestic sources to meet the United States' defense, essential civilian, and homeland security requirements
 - The industrial resource, material, or critical technology item is essential to national defense
 - Without presidential action under [50 U.S.C. §4533], industry cannot reasonably be expected to provide the necessary capability
 - Actions pursuant to [50 U.S.C. §4533] are the most cost effective, expedient, and practical alternative method for meeting the need
- The House Committee on Financial Services and the Senate Committee on Banking, Housing, and Urban Affairs have jurisdiction over DPA

DPA Authorities		
Title I	Title III	Title VII
Priorities & Allocations	Expansion of Productive Capacity and Supply	General Provisions
<ul style="list-style-type: none"> • Prioritize Federal contracts over all other orders • Control distribution of scarce materials within the civilian economy • Allocate scarce materials against Federal or private contracts • Prevent hoarding of scarce materials 	<ul style="list-style-type: none"> • Incentives to develop, maintain, modernize, and expand production capacity or critical technologies: <ul style="list-style-type: none"> ○ Loans / loan guarantees ○ Purchases or purchase commitments ○ Grants, Contracts, and Subsidies 	<ul style="list-style-type: none"> • Mandatory survey authority of any U.S.- registered business entity • Anti-trust immunity for industry, to develop and implement national emergency preparedness plans • Committee on Foreign Investment in the United States (CFIUS) • Civilian Executive Reserve, called into Federal service during a national emergency

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DEFENSE PRODUCTION ACT TITLE III



AUTHORITIES

Loan Guarantees §301 (50 U.S.C. 4531)	Loans §302 (50 U.S.C. 4532)	Purchase Commitments §303 (50 U.S.C. 4533)	Purchases §303 (50 U.S.C. 4533)
<ul style="list-style-type: none"> • May be extended when credit is not available to the loan applicant under reasonable terms and conditions sufficient to finance the activity • Prospective earning power and value of the security pledged provide a reasonable assurance of repayment of the loan to be guaranteed 	<ul style="list-style-type: none"> • May be extended when private financing is beyond the risk of the commercial market • Projected earnings following the loan are sufficient to cover repayment costs 	<ul style="list-style-type: none"> • Create a guaranteed demand to reduce risks for industry to make their own investments 	<ul style="list-style-type: none"> • Provide direct subsidies to companies to assist in establishing production capabilities including: <ul style="list-style-type: none"> – Purchase and installation of production equipment in privately or Government owned facilities – Engineering support to improve quality and yield – Sample quantities for process validation and qualification testing

PRIORITY AREAS

Sustain Critical Production	Commercialize Research and Development Efforts	Scale Emerging Technologies
<p>“To create, maintain, protect, expand, or restore domestic industrial capabilities essential for National Defense”</p>	<p>“From Government sponsored research and development to commercial applications” and “from commercial research and development to National Defense”</p>	<p>“For the increased use of emerging technologies in security program applications and the rapid transition of emerging technologies”</p>





WHY IS EVERYONE TALKING ABOUT DPA?

- While the DPA was enacted in 1950, the past few years have seen an **increased interest** in the authorities from the Executive and Legislative Branches, Government agencies, and the public.
- In March 2020, Congress **appropriated \$1B** to the DPA Purchases account via the **CARES Act** "to prevent, prepare for, and respond to coronavirus".
 - Greatly **reduced acquisition timelines** resulting in the obligation of \$800M in ~10 months
- In FY2022, the DPA was appropriated **\$600 million by the Additional Ukraine Supplemental Appropriations Act** to mitigate industrial base constraints for faster **missile production** and expanded domestic capacity for **strategic and critical minerals**.
 - A **further \$146 million was reprogrammed** into the DPA Fund for increased production of solid rocket motors
- Also in FY2022, the **Inflation Reduction Act appropriated** \$500 million for enhanced use of the DPA.
 - The funds were split equally between Department of Energy and the DoD
 - The **\$250 million** provided to the DoD will be applied to expanding capabilities for **domestic mining, mineral processing**, and related industrial sectors for **large-capacity batteries**.
- The Executive and Legislative branches are increasingly viewing DPA authorities as valuable tools to be leveraged against urgent, critical issues.



CRITICAL CHEMICALS, CRUCIAL FOR KINETIC CAPABILITIES



Kinetic capabilities: military action, including all energetic (explosive, propellant, and pyrotechnic) systems.

Key compounds, materials, and minerals for the manufacturing of munitions

- Energetics, non-energetics and precursors for both

Issues surrounding critical chemicals supply chain...

- Reduced DoD budgets and variable demands
- Fierce foreign competition
- Increased regulations; from manufacturing (or prior) to finished products
- Challenging quality and performance requirements (MIL specs)
- Obsolescence

...has taken most of chemical production offshore, increasing other (adversary) nations dependency

Many of the chemicals, particularly non-energetics and precursors of both non-energetics and energetics are used across many industries and applications.



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CRITICAL CHEMICALS SCOPE



- Identify CCs for the DoD and address supply chain vulnerabilities for each (e.g. origin, weak points...)
- Collaborate with other agencies that also depend on critical chemicals
 - Often, multiple agencies have a need for the same chemical
- Revise/update materials and chemicals specifications
- Partner with commercial industry to identify and mitigate domestic chemicals supply weaknesses
 - Aggregate demand, several revenue streams
- Fewer programs, but of larger funding and scope
- Gain understanding of the strengths and successes from other industries and evaluate applicability to defense



Goal: Establish onshore manufacturing of the “top critical chemicals” to ensure continuous supply, while minimizing environmental impact.



CURRENT PROJECTS: GOEX



- Approx. \$4.5M obligated to rebuild capability to domestically manufacture black powder
- Production of this critical material for defense was shut down in June 2021. should be relaunched by the end of the summer
- DoD investment to re-establish domestic capacity at GOEX has been highlighted in an article by the [Wall Street Journal](#)



The U.S. Military Relies on One Louisiana Factory. It Blew Up.
wsj.com • Subscription may be required



CURRENT PROJECTS: PERPETUA

- Approx. \$59M obligated so far, from the supplemental effort to replace munitions supplied as aid to Ukraine
- Establish a mining operation in Stibnite, ID to extract antimony trisulfide (a critical mineral used in several munitions)
- The project is part of a larger effort by Perpetua: *Stibnite Gold Project*



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CALL 12



Funding opportunity announcement (FOA) to establish domestic capacity to manufacture several chemicals, which have been established as critical for the defense of the country.

Selection criteria:

1. Modularity of equipment: ability to produce the most amount of chemicals with the least amount of capital expenses.
2. Ability to produce multiple critical chemicals using same (flexible) manufacturing processes
3. Utilize modern manufacturing technologies to maximize throughput and efficiency.
4. Establish commercial market strategy: capture both DoD and commercial applications, maximizing sustainment.
5. Apply green/environmentally friendly practices.
6. Domestic sourcing of raw materials throughout the entire supply chain. Elimination of dependency on China

Announcement was made public on December 9th, 2022; closed on March 9th, 2023

Defense Production Act (DPA) Title III FA8650-19-S-5010 CALL 012 - Critical Chemicals Production



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CALL 12 CHEMICALS



OXIDIZERS (I)

Barium Nitrate
Lead Nitrate
Potassium Nitrate
Strontium Nitrate
Strontium Peroxide
Strontium Oxalate
Potassium Chlorate
Potassium Perchlorate

METALS/ SEMI-METALS (I)

Magnesium
Amorphous Boron
Titanium Powder
Zirconium Powder

PRECURSORS (O)

Trichlorobenzene (TCB)
4-Nitroanisole (4-NA)
Salicylic Acid
Sebacic Acid

ENERGETICS (O)

Triaminotrinitrobenzene (TATB)
2,4-Dinitroanisole (DNAN)

STABILIZERS

Potassium Sulfate (I)
Diphenylamine (DPA) (O)
Methyl Centralite (O)
Ethyl Centralite (O)

SMOKE DYES

Sublimized Quinizarin
Tech Quinizarin
Nitroanthraquinone (NAQ)
Quinaldine

MISC. MATERIALS

Boron Carbide (I)
Viton B (O)

JET FUEL (I)

Hydrazine



DOD Awards \$192.5 Million to Establish Domestic Manufacturing Capabilities for Critical Defense Chemicals

U.S. Department of Defense



CALL 12 AWARDS



COMPANY NAME	CHEMICALS	GOVERNMENT FUNDING	AWARD DATE
CoorsTek Inc.	Boron Carbide	\$49.6M	December 2023
GOEX/Estes Energetics	Barium Nitrate Potassium Chlorate Potassium Nitrate Potassium Perchlorate Potassium Sulfate Strontium Nitrate Strontium Oxalate Strontium Peroxide	\$13M	September 2023
Lacamas Laboratories	4-Nitroanisole Diphenylamine (DPA) Ethyl Centralite Methyl Centralite Salicylic Acid Sebacic Acid Trichlorobenzene (TCB)	\$86M	December 2023



CALL 12 AWARDS



COMPANY NAME	CHEMICALS	GOVERNMENT FUNDING	AWARD DATE
Magrathea Metals Inc.	Magnesium	\$19.5	September 2023
METSS Corporation	Barium Nitrate Lead Nitrate Potassium Chlorate Potassium Nitrate Potassium Perchlorate Potassium Sulfate Strontium Nitrate Strontium Oxalate Strontium Peroxide	\$14M	January 2024
Powdermet Inc.	Titanium Powder Zinc Powder	\$49.6M	August 2023
Synthio Chemicals, Inc	Diphenylamine Ethyl Centralite Methyl Centralite Smoke Dyes (2)	\$13M	December 2023



NDAAs 2023 REPORT



section 244, p. 159

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1 SEC. 244. LIMITATION ON SOURCING CHEMICAL MATE-
2 RIALS FOR MUNITIONS FROM CERTAIN
3 COUNTRIES.

4 (a) LIMITATION.—The Secretary of Defense may not
5 procure a chemical material for munitions specified in sub-
6 section (b) from any country specified in subsection (c).

7 (b) CHEMICAL MATERIALS SPECIFIED.—The chem-
8 ical materials for munitions specified in this subsection are
9 the chemicals listed under the heading “Task 1: Domestic
10 Production of Critical Chemicals” in section 3.0E of the
11 document of the Department of Defense titled “Statement
12 of Objectives (SOO) for Critical Chemicals Production”
13 (FOA: FA8650-19-S-5010, Appendix VI, Call: 012) and
14 dated December 5, 2022.

15 (c) COUNTRIES SPECIFIED.—The countries specified
16 in this subsection are the following:

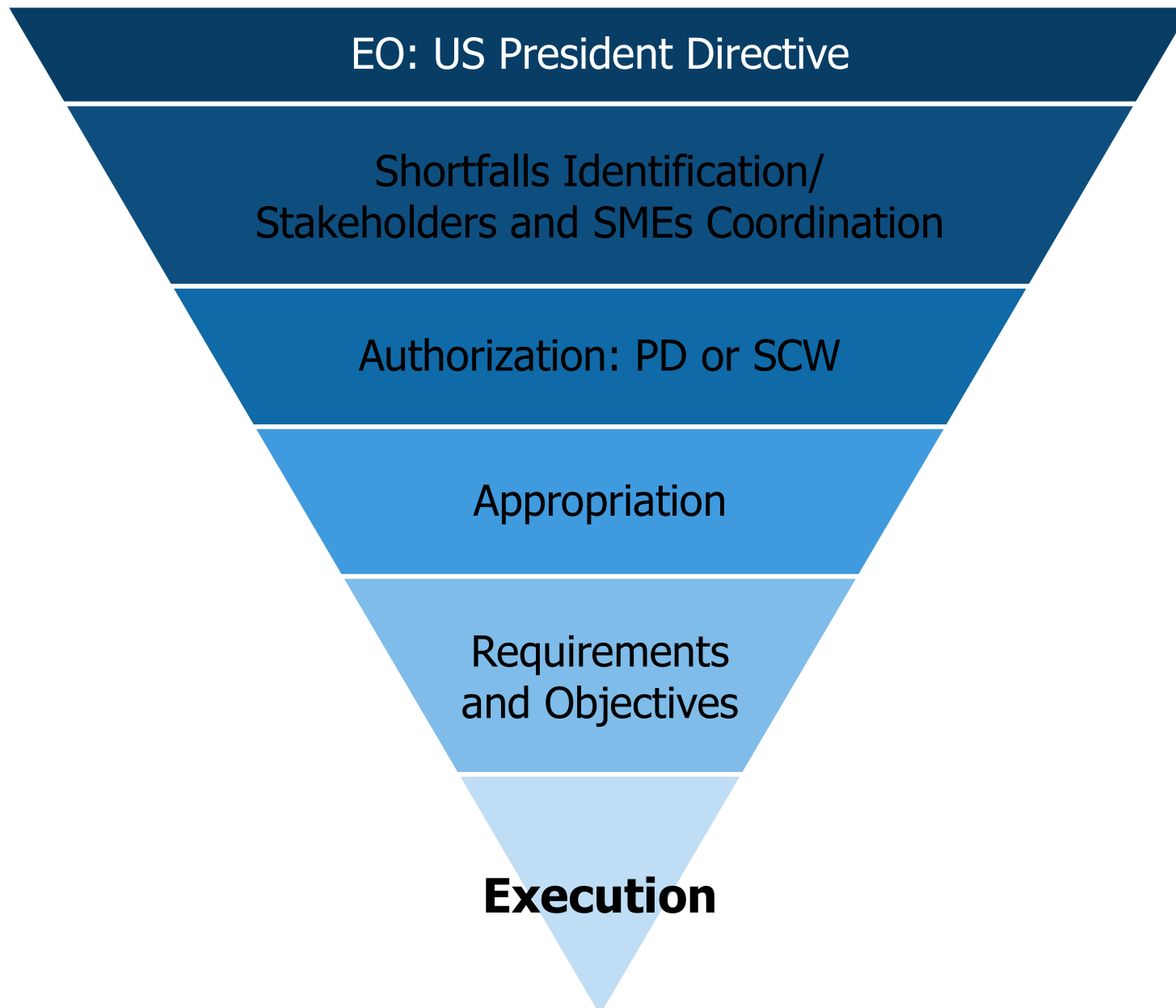
- 17 (1) The People’s Republic of China.
- 18 (2) The Russian Federation.
- 19 (3) The Islamic Republic of Iran.
- 20 (4) The Democratic People’s Republic of North
21 Korea.

22 (d) EFFECTIVE DATE.—The requirements of this
23 section shall take effect on a date determined by the Sec-
24 retary of Defense that is not later than September 30,
25 2028.

after September 2028,
chemicals included in call 12 are
prohibited from being sourced
from the countries listed



FROM EXECUTIVE ORDER TO FUNDING



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DEFENSE INDUSTRIAL BASE CONSORTIUM OTHER TRANSACTION AUTHORITY



- Diversify and expand DIB
- Create funding opportunities for sectors that affect national defense
- First step: [join the consortium](#)
- Solicitations for “Enhanced White Papers” (template available)
- Selected few will be put in “the basket”, solicitors will be asked for SOW (process may be iterative)
- Chosen ones will receive a contract (FAR or OTA)



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STIMULATING THE CHEMICAL INDUSTRY



- The Austin Center for Manufacturing & Innovation (ACMI): holistic approach to supporting manufacturing innovation:
 - ☞ ACMI Capital: VC funds promoting technologies for manufacturing development
 - ☞ ACMI Properties: real estate model innovations, scalable manufacturing space
 - ☞ ACMI Center: building on the above to accelerate on-shoring of critical supply chains
- Lowering barriers of entry to serve the defense industry
 - DPAI funding to leverage and stimulate private capital
 - Onshoring production critical chemicals to several industries (aggregated demands across markets)



- Pilot: funding non-traditional producers to develop multi-use chemicals
- Munitions campus: co-located space with shared infrastructure for advanced manufacturing and innovation to meet the nation's national security needs with the American industrial base



EXAMINING THE FUTURE OF CHEMICAL PRODUCTION



CHEMICALS THAT ARE COMPETITIVE IN THE MARKETPLACE PRODUCED WITH RESPECT TO THE ENVIRONMENT



- Utilize modern manufacturing technologies to maximize throughput and efficiency
- Ability to produce multiple critical chemicals using same (modern) processes
- Modularity and agility of equipment: downtime reduction and fast switchover
- Apply green/environmentally friendly practices. Focus on biomanufacturing and biotechnology
- Establish commercial market strategy: capture both DoD and commercial applications
- Domestic sourcing of raw materials, reduce/eliminate supplies from foreign (adversary) nations



Burning Questions?