# Supply Chain

**Background**
A strong domestic commercial explosives manufacturing industry is essential to the economy of the United States. Our products are used for quarrying, mining critical minerals, oil and gas production, renewable energy production, construction, and demolition. Collectively, all of these activities make today's modern way of life possible. If you use or consume it, explosives make it possible. In order to produce these essential commercial explosive products, manufacturers need access to reliable sources of raw materials and inputs.

**High Explosives**
High explosives (HMX, RDX, PETN and TNT) are chemicals or mixtures that are manufactured or synthesized in highly controlled processes and are commonly used in the commercial explosives industry. HMX, RDX and TNT are common and critical ingredients in the manufacturing of commercial explosives but are extremely difficult to source domestically.

- HMX and RDX are both single sourced and produced at only one location in the U.S.
- There are no TNT manufacturing plants in the U.S., making us highly dependent on foreign sources. The majority of imports of these products into the U.S. are from Poland, Turkey, China, South Korea, Australia and India. Current geopolitical conflicts have made it extremely difficult to source materials from nearly all these countries.
- PETN is currently produced at three locations in the U.S.

**What is HMX used for?**
While the U.S. military is the primary consumer of HMX, it is also an ingredient necessary to make commercial explosives products like detonating cord and shaped charges used in industrial applications like oil and gas production, mining, and demolition.

**What is RDX used for?**
Similar to HMX, the U.S. military is the primary consumer of RDX, also an ingredient necessary to make commercial explosives products commonly used in industrial applications including demolition, mining, oil and gas production, and other industrial activities where a powerful explosive is required.

**What is TNT used for?**
The U.S. military is also the primary consumer of TNT. However, it is an essential ingredient in the manufacturing of commercial explosives products like cast boosters, commonly used in the mining and quarrying industries.

**What is PETN used for?**
PETN is commonly used in the manufacturing of detonating cord, shock tube, detonators and cast boosters.

**Ammonium Nitrate**
The U.S. commercial explosives industry uses ammonium nitrate (AN) in two forms to manufacture blasting agents and explosive products. The first form is a liquid known as ammonium nitrate solution (ANS). The second is solid and is referred to as technical grade ammonium nitrate (TGAN) and has a bead-like shape called a “prill." Today, more than 90 percent of commercial explosives consumed in the United States are ammonium nitrate based.

Ammonium Nitrate is considered an oxidizing agent but can have energetic properties only when combined with certain chemical compounds like fuel oil. By itself, AN is a safe and stable compound that under normal storage conditions is extremely unlikely to detonate. The reason AN is used across the commercial explosives supply chain in such a high volume is that it’s a much more stable compound to use and is a significant safety improvement over the nitroglycerine-based products that were used in the past. Another reason AN is used as a main ingredient in commercial explosives is because the elements that make up its composition are both abundant and affordable. While the current domestic supply of AN is relatively stable, additional regulation on the manufacturing or use of this important material could severely impact the future supply.

**What is Ammonium Nitrate use for?**
Ammonium Nitrate Fuel Oil (ANFO), Ammonium Nitrate Emulsions (ANEs) and water gels and slurries are primarily used in the mining, quarrying and construction industries.

**Ask:** In order to maintain a strong domestic commercial explosives manufacturing industry, Congress should act to ensure the commercial explosives industry is able to domestically source raw materials and other necessary ingredients including HMX, RDX and TNT, that are essential to the production of commercial explosives products. In addition, Congress should ensure that any legislation or regulation impacting ammonium nitrate must be science-based and should not impact the availability of supply of this important material.