



What Is M6?

- M6 is a military propellant (explosive) used in firing heavy artillery (very large guns)
- M6 is one of numerous propellant formulations that the military uses



What Is M6?

- It consists of grains of various shapes and sizes, up to an inch long
- Usually packed in “bags” that are placed in the gun in quantities relative to the distance the projectile is meant to travel.



What Is M6 made of?

- 87% Nitrocellulose (explosive)
- 10% Dinitrotoluene (plasticizer)
- 3% Dibutylphthalate (plasticizer, controls burn and flash)
- <1% Dipheylamine (stabilizer)
- <1% Potassium Sulfate (reduces flash)



What Is M6 made of?

- Nitrocellulose is created by soaking an organic cellulose product such as cotton or wood pulp in nitric acid.
- The nitrocellulose is combined with the other chemical additives, and then extruded through a press into long cords, which are cut into grains of the appropriate size.

What Are Clean Burning Igniters (CBI)?

- Igniters provide hot flaming gases and particles to ignite the propellant
- Igniters are very hygroscopic (attract water) and subject to rapid deterioration on absorption of moisture
- Igniters are also used to burn excess propellant that are not used in the field

What Are Clean Burning Igniters (CBI)?

- CBI is a flaky material, and is also kept in bags, though in much smaller amounts than M6
- CBI is 98% Nitrocellulose, with small amounts of Diphenylamine, Potassium Nitrate and Graphite glaze



What are the Main Risks?

- M6 and CBI are not chemical weapons, they are explosives.
- The immediate risk is for the M-6 to become unstable and explode. Stabilizers in the mixture degrade over time.
- On October 15, 2012, an uncontrolled explosion at Camp Minden shattered windows four miles away in the City of Minden and generated a 7,000-foot mushroom cloud.

What are the Main Risks?

Facilitator Note: This slide was highly controversial at the Dialogue meeting and the topic will be reviewed and discussed by the Technology Working Group.

- The Army Explosive Safety Board experts found materials at Camp Minden to be in a deteriorated state and warned of potential self- ignition risk as soon as August 2015.
- Also, incomplete combustion of organic material in the presence of a chlorine source is known to produce dioxins and furans. If this were to happen, the chlorine source would have to come from the CBI or other ignition material.



The Path to Cleanup So Far

October 2014 Agreement

- On October 28, 2014, The US Army, US EPA, LMD, and LDEQ signed a Settlement Agreement for the destruction of The M6 and CBI that became effective on November 4, 2014.
- Provided \$20 million dollar from DOJ/Department of Treasury judgment fund
- Remedy identified was Open Burning in burn trays at Camp Minden. Materials are destroyed by self-sustained combustion after being ignited. They would not be confined and therefore would not detonate.



The Path to Cleanup So Far

October 2014 Agreement

- Burn trays are used to reduce soil and ground water contamination, interaction with soil during combustion, and containment of residual materials for collection and disposal.
- EPA used the Open Burn/Open Detonation Dispersion Model developed by the Army West Desert Test Center and emission factors developed by the Army Technical Center for Explosives Safety to determine the potential air emissions from controlled open burning.