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PRESENTATION ON

HISTORY AND DEVELOPMENT OF EXPLOSIVE- RDX (SYNTHESIS, PROPERTIES)

CUFS 2416 EXPLOSIVE AND POST BLAST INVESTIGATION

B.SC. FORENSIC SCIENCE (SEM 6)
SCHOOL OF FORENSIC SCIENCES
BHUBANESHWAR CAMPUS

CONTENT

- RDX
- History and development of explosive.
- Synthesis
- Properties

ABOUT RDX

- RDX stands for Royal Demolition Explosive.
- It is also known as cyclonite or hexogen.
- The chemical name for RDX is Hexahydro-1,3,5-trinitro-1,3,5-triazine.
- It is a white powder and is high explosive.
- RDX is used as an explosive and is also used in combination with other ingredients in explosives.
- Its don't have odor and taste.
- RDX is a synthetic chemical, it does not occur naturally in the environment.
- It creates fumes when it is burned with other substances.



HISTORY AND DEVELOPMENT OF RDX

- Discover by Georg Friedrich Henning of Germany and patented in 1898.
- RDX was widely used during World War II, often in explosive mixtures with TNT such as Torpex, Composition B, Cyclotols, and H6. RDX was used in one of the first plastic explosives.
- The U.S. produced about 15,000 long tons (15,000 t) per month during World war II and Germany about 7,100 tonnes (7,000 long tons) per month.
- Scientists in England and Canada worked on a new explosive substance called Research Department Explosive (code name RDX). While having twice as much power as TNT, it was also considered to be very unstable.

CONTINUED...

- **Germany**

RDX was reported in 1898 by Georg Friedrich Henning, who obtained a German patent (patent No. 104280) for its manufacture by nitrolysis of hexamine (hexamethylenetetramine) with concentrated nitric acid.

- **UK**

In the United Kingdom (UK), RDX was manufactured from 1933 by the research department in a pilot plant at the Royal Arsenal in Woolwich, London, a larger pilot plant being built at the RGPF Waltham Abbey just outside London in 1939.

- **Canada**

A different method of production to the Woolwich process was found and used in Canada, possibly at the McGill University department of chemistry. This was based on reacting paraformaldehyde and ammonium nitrate in acetic anhydride.

- **UK, U.S., and Canadian production and development**

RDX had been tested by Picatinny Arsenal in 1929, and it was regarded as too expensive and too sensitive. The Navy proposed to continue using ammonium picrate.

SYNTHESIS

- RDX was produced by continually adding hexamine and concentrated nitric acid to a cooled mixture of hexamine and nitric acid in the nitrator.

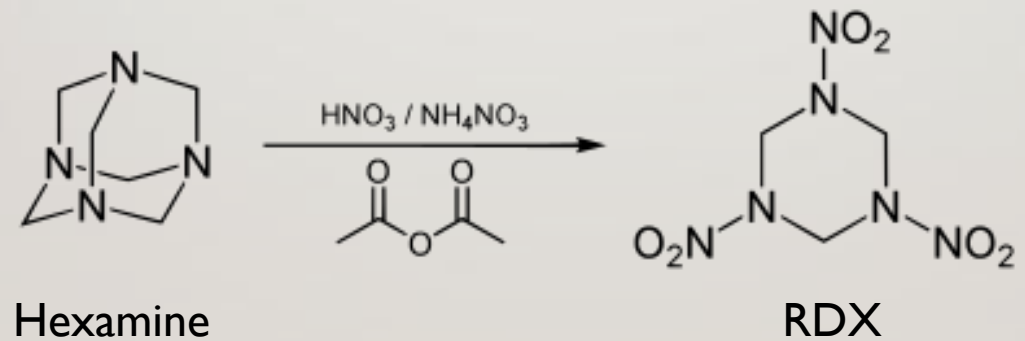


Fig. – Chemical Equation for synthesis of RDX

PROPERTIES

Property	Information
Molecular weight	222.26
Color	White
Physical state	Crystalline solid
Melting point	204–206 °C
Boiling point	Decomposes
	Decomposition temperature: 213 °C
Density at 20 °C	1.82 g/mL

THANK YOU.

