Triacetone Triperoxide (TATP) & Hexamethylene Triperoxide Diamine (HMTD): Terrorist Weapons of Choice

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Overview

- Presenter’s Background
- Understanding explosives
- Chemical nature of TATP and HMTD
- Basic ingredients and accessibility
- Volatility and power upon detonation
- History of use by terrorists
- Detection issues/current technologies
Presenter’s Background

- Retired USAF Colonel & OSI Special Agent
- 25+ year career in federal law enforcement and CI
- 13 PCS moves
- Commanded 5 units, incl wing
- Senior Military Advisor to Henley-Putnam University
Understanding Explosives

• Long history of use
• Classification: Low & High
• High explosives tightly controlled
• Terrorist seek alternatives
• Improvised Explosive Device
  – TATP/HMTD
  – Old compounds, new uses
General Nature of TATP

• Triacetone Triperoxide
  – Acetone peroxide
  – Peroxyacetone
  – TATP/TCAP
• “Mother of Satan”
• Used as main charge or detonator
General Nature of HMTD

- Hexamethylene Triperoxide Diamine (HMTD)
- Common ingredients
- Highly volatile & unstable
- White crystalline appearance, much like TATP
Basic Ingredients & Accessibility

- Law enforcement safety
- Common household ingredients
  - Acetone
  - Hydrogen Peroxide/Hair dye
  - Citric acid
  - Car batteries (sulphuric acid)
  - Hexamine fuel tablets
  - Pool treatment products
Volatility & Power

- TATP/HTMD unlike nitrogen based explosives
- Entropic Explosion
- Set off by heat or mild shock
- Small quantities, big results
- TATP = 83% the power of TNT
- HMTD = 100% power of TNT
acetone peroxide
in paper roll
ignited electrically
Terrorist Use of TATP & HMTD

- Explosive “enthusiasts” or terrorists
- No legitimate uses
- “Type II” IED use
- “Shoe Bomber” & “Underwear Bomber” used Type II devices
Terrorist Use of TATP & HMTD

- 12/2001 Shoe Bomber
- 7/2005 London bombings
- 9/2006 Denmark
Terrorist Use of TATP & HMTD

- 9/2007 Denmark
- 12/2009 Underwear Bomber
- 9/2010 Denmark
- Palestinian terrorists have long history of use
Domestic Groups & TATP/HMTD

- 7/1988 Tulsa, OK
- 6/1996 Los Angeles, CA
- 1999, Location undisclosed
- 9/2003 Pleasanton, CA
Domestic Groups & TATP/HMTD

- 7/2004 Pennsylvania
- 10/2005 Oklahoma
- 9/2009 Denver, CO
- 9/2009 Charlotte, NC
Detection Issues & Technology

- Terrorist use of explosives drives airport security
- Shoe Bomber...take off shoes
- Underwear Bomber...check for carry-on liquids
- Hand swabbings?
- Should we look for “things” or “people”?
- False sense of security?
- Behavioral indicators
Detection Issues & Technology

• Behavioral indicators
• Airports:
  – Anomaly detection
  – Explosive detection
• Plants?
Our Strength Remains...