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*WCO Programme Global Shield (PGS) – E-book No.*02

[Training Material for Departmental Use]

E-BOOK

On

Improvised Explosive Devices (IED)

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Note:

1. In this E-book, attempts have been made to explain about ***Improvised Explosive Devices***. It is expected that it will help departmental officers in their day-to-day work.

2. Though all efforts have been made to make this document error free, it is possible that some errors might have crept into the document. If you notice any errors, the same may be brought to the notice of the NACEN, RTI, Kanpur on the Email address: rtinacenkanpur@yahoo.co.in. This may not be a perfect E-book. If you have any suggestion to improve this book, you are requested to forward the same to us.

3. This e-book is one of the several e-books dealing with different aspects of WCO Programme Global Shield (PGS). The Programme Global Shield (PGS) is a long term law enforcement initiative of WCO alongwith its partner organizations, namely, United Nations Office on Drug and Crime (UNODC), International Police Organization (INTERPOL) and member countries. This Programme is aimed at combating the illicit diversion and trafficking of high risk precursor chemicals, which are commonly used by criminal elements/terrorist organizations to make Improvised Explosive Devices (IEDs).

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Sd/-

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INDEX

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Learning Objectives of this E-book

Learning objectives of this E-book are:-

After reading this book, the reader will have improved idea about the following:-

- What are Improvised Explosive Devices
- Some Historical Perspective of IEDs
- Varieties and Types of IEDs
- Components of IEDs

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1. Introduction

1.1 An **improvised explosive device** is basically a "homemade" bomb and/or destructive device, used by criminals, vandals, terrorists, suicide bombers, and insurgents to intimidate, inflict casualties, destroy property, and destabilize the existing setup or regime in the country. IEDs come in many forms, ranging from a small pipe bomb to a sophisticated device capable of causing massive destruction of life and property. IEDs can be delivered in a package; or carried or delivered in a vehicle; or carried, placed, or thrown by a person; or concealed on the roadside. The term "IED" came into common usage during the Iraq War.

1.2 The use of IEDs to cause destruction of life and property is becoming more widespread and common. Every day, one can read news of IED blast taking place in some part of the world. By effectively controlling the availability of some essential part of IEDs such as detonators, explosive charge etc., the threat of IEDs can be reduced to a large extent.

1.3 IEDs are inexpensive and can be easily manufactured, concealed and detonated. Further, IEDs can be manufactured by using commonly available material or chemicals. It may incorporate military stores but is normally devised from non-military components. Sometimes, IEDs may also be used for dispersing chemical, radiological, or biological material. Such IEDs are also known as **'dirty bombs'**.

1.4 In 2014, 190 IED explosions took place in our country, including 98 blasts in Maoists-hit states. 55% of these explosions were targeted towards general public, 38% towards security forces, 4% towards government properties and 3% of such explosions were targeted towards VIPs. In 92% cases, high-grade explosives were used and in 8 per cent cases, low grade explosives were used. Out of these 190 blasts, 61 blasts were in Northeastern states, 98 in left wing extremism affected states, 19 in Jammu and Kashmir and 12 in other parts of the country.

2. Definition of Improvised Explosive Device

2.1 IED may be defined as under:-

It is a device, placed or fabricated in an improvised manner, incorporating destructive, lethal, noxious, pyrotechnic or incendiary chemicals, and designed to destroy, incapacitate, harass or distract.

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2.2 For the purpose of easy understanding, the above said definition of IED may be divided into three parts as explained under:-

It is a device,-

- **which is placed or fabricated in an improvised manner**
- **It incorporates destructive, lethal, noxious, pyrotechnic or incendiary chemicals;**
- **It is designed to destroy, incapacitate, harass or distract.**

3. History of IEDs

3.1 The term "improvised explosive device" comes from the British army in the 1970's, after Irish republican army (IRA) used bombs made from agricultural fertilizer and SEMTEX smuggled from Libya to make highly effective booby trap devices or remote controlled bombs.

> ***Note:*** *SEMTEX is a plastic explosive containing RDX (i.e. Research Department Explosive) and PETN [i.e. Penta-erythritol tetra-nitrate].*

4. Types / Categories of IEDs

4.1 IEDs are extremely diverse in design, and may contain many types of initiators, detonators, penetrators and explosive loads. Anti-personnel IEDs also contain fragmentation generating objects such as nails, ball bearings or even small rocks to cause wounds at greater distances than blast pressure alone could. IEDs are triggered by various methods, including remote control, infra-red or magnetic triggers, pressure sensitive bars or trip wires (victim operated).

4.2 IEDs vary based on the type of explosive used, the method of assembly, and the method of detonation and is restricted only by human ingenuity. The types of IEDs are infinite, but generally tend to fall into three categories:

(i) Package/Container Type IED

These types of IEDs are typically made from mortar and artillery shells, or some other type of package/container. They can be thrown at a vehicle, concealed in potholes or covered with dirt alongside roads. They can also be placed in cinder blocks or piles of

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sand to direct the blast. They are either "command-detonated" by wire or remote device or "time-delayed" and detonated by cordless phone from a car.

(ii) Vehicle-borne IED

Vehicle-borne IEDs (VBIEDs) are devices that use a vehicle as the package or container. These IEDs come in all shapes, colors and sizes, varying according to the type of vehicles available. Car bombs are one of the most common types of IEDs in war-zones. However, they are not restricted to war-zones. The Chart issued by the Bureau of Alcohol, Tobacco, Fire Arms and explosives of USA-giving vehicle description, maximum Explosive Capacity, Lethal Air Blast Range, Minimum Evacuation Distance and Falling Glass Hazard is as under:-

ATF	Vehicle Description	Maximum Explosives Capacity	Lethal Air Blast Range	Minimum Evacuation Distance	Falling Glass Hazard
	Compact Sedan	500 pounds 227 Kilos (In Trunk)	100 Feet 30 Meters	1,500 Feet 457 Meters	1,250 Feet 381 Meters
	Full Size Sedan	1,000 Pounds 455 Kilos (In Trunk)	125 Feet 38 Meters	1,750 Feet 534 Meters	1,750 Feet 534 Meters
	Passenger Van or Cargo Van	4,000 Pounds 1,818 Kilos	200 Feet 61 Meters	2,750 Feet 838 Meters	2,750 Feet 838 Meters
	Small Box Van (14 Ft. box)	10,000 Pounds 4,545 Kilos	300 Feet 91 Meters	3,750 Feet 1,143 Meters	3,750 Feet 1,143 Meters
	Box Van or Water/Fuel Truck	30,000 Pounds 13,636	450 Feet 137 Meters	6,500 feet 1,982 Meters	6,500 Feet 1,982 Meters
	Semi-Trailer	60,000 Pounds 27,273 Kilos	600 feet 183 Meters	7,000 Feet 2,134 Meters	7,000 Feet 2,134 Meters

[Source: WCO Training Material]

Note: The abbreviation "ATF" stands for Bureau of Alcohol, Tobacco, Fire Arms and Explosives (Department of Justice) in USA.

(iii) Suicide-borne IED:

The devices carried by suicide bombers usually employ a high-explosive/fragmentary effect and use a command detonation firing system–some sort of switch or button that the person activates by hand.

5. Countries Affected by Use of IEDs –

5.1 In the present scenario, IEDs have become one of the most common methods for destruction. IEDs are not restricted to war zones. In recent times, IED attacks have been reported by several countries, namely, Iraq, Afghanistan, Pakistan, India, Yemen, Russia, Nigeria, Bangladesh, Thailand, Saudi Arabia etc.

5.2 It may be mentioned that IEDs not only threaten lives, they threaten trade. Further, we may also note the following words of WCO Secretary General Mr. Kunio Mikuriya:-

"Cross-border trade has to be safe and secure from threats that may hinder or damage the global trading system and innocent civilian lives should be protected from threats that may risk or imperil their lives."

6. Components of IEDs

6.1 Any IED has five basic components –

(i) A switch (Trigger or activator):

A trigger or Activator is basically a switch or some other direct or indirect means of setting the device off, such as a radio signal, trip wire, cell phone, timer or firing button that someone presses.

(ii) Power source (battery):

Power supply is often provided by car batteries or alkaline flashlight batteries.

(iii) An initiator (fuse or detonator):

A detonator is a small explosive charge that sets off the main charge. Detonators are usually electrical, like those used for explosions in construction (blasting caps).

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(iv) Charge (explosive):

A main charge is the primary explosive body which is mainly responsible for creating the blast wave.

(v) A container (body to hold everything together):

A container is used to hold everything together. The container may be designed to force the blast in a specific direction.

Note: It may be noted that by exercising effective controls on the possession and availability of important components such as (i) explosive charge including precursor chemicals; and (ii) detonators, similar to those put in place by European Union by Regulation No. 98/2013, the problem of IEDs blast can be tackled and minimized significantly.

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