Dr Christina Baxter, of EmergencyResponseTIPS.com and Hazard3.com, offers helpful advice for first responders

Keeping you safe!

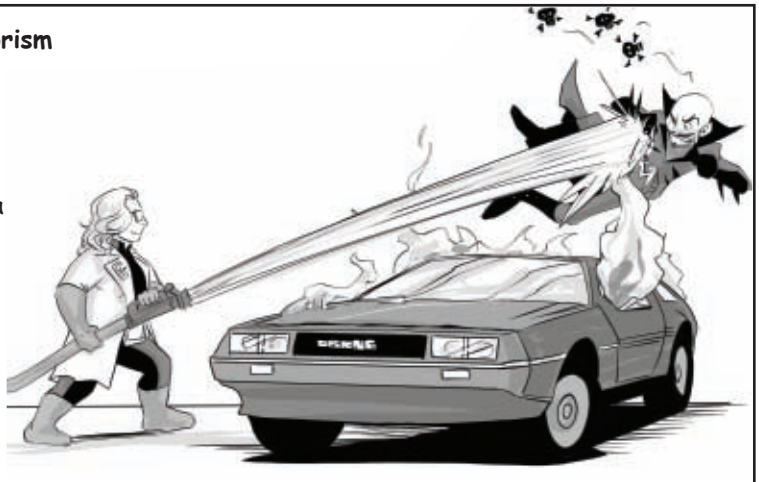
This column aims to provide operational guidance to the hazmat/CBRNE community regarding the selection and performance of equipment and tactics. In this issue we are focussing on the evolving threat of fire as a weapon (FaW), or pyro-terrorism. In 2006, Robert Baird coined the term pyro-terrorism and defined it as: "the use of incendiary attacks to intimidate or coerce a government, the civilian population, or any segment thereof, to advance political or social objectives".

While FaW has been used for centuries, it is only in more recent times that this mode of attack has been embraced and promoted by extremists. Since the May 2012 issue of Inspire magazine, pyro-terrorism has remained in the forefront with violent extremists supporting both foreign terrorist organisations and domestic hate groups. In addition, online propaganda continues to support the use of FaW as illustrated in the table below.

Timeline	Publication	Affiliation	Details
March 2022	Mujahideen in the West	Al-Qaeda	Recommended the use of Napalm (polystyrene and fuel) devices and potential additions of aluminum and soap.
November 2020	Wolves of Manhattan	Al-Qaeda in the the Arabian Peninsula (AQAP)	Recommended setting fires and using Molotov cocktails as methods of attack.
July 2020	Incite the Believers video	ISIS	Urged supporters to conduct arson attacks.
January 2017	Rumiyah	ISIS	Provided instructions for the development of improvised incendiary devices (IIDs) and recommended targeting building and wild lands.
March 2013	Inspire	AQAP	Recommended targeting parked vehicles.
May 2012	Inspire	AQAP	Provided instructions on the development of timed incendiary devices and recommended targeting buildings, wild lands, urban interfaces, and vehicles.

Terrorist publications highlighting pyro-terrorism

In 2020, there were 84 incidents in the US alone, and there are many highly publicised incidents that can be used to demonstrate pyro-terrorism. These include:



- A July 2013 attack by Boko Haram in Nigeria that saw 46 students and staff shot in an ambush while fleeing a burning building.
- The September 2012 attack on the US mission in Benghazi, Libya , which left four Americans dead, two via smoke inhalation and two from a mortar round.
- In October 2009 a lone man used a Molotov cocktail on a South Korean subway, in an attack that killed at least 130 passengers.
- In November 2008, a complex coordinated attack involving 10 terrorists and 12 coordinated shooting, arson, and bombing events took place over four days in Mumbai, India. The attacks resulted in 164 deaths, with several people killed by fires set within the hotel.
- In FaW incidents, the fire often escalates rapidly, and casualties can not only suffer horrific thermal injuries, but may be quickly overwhelmed by toxic combustion products while attempting to escape to safety.

Current threat devices and tactics

Molotov cocktails, or poor man's grenades, are simple incendiary devices made using a glass container filled with gasoline (petrol) or another flammable liquid, and provided with a fuse, generally a cloth wick. The fuse is lit and the device is thrown so the glass smashes and burning fuel is spread around the target.

To increase the effectiveness of incendiary attacks, Napalm devices using additives such as polystyrene dissolved in gasoline (petrol) are currently recommended by the Mujahideen in the West magazine. In this case, the polystyrene thickens the gasoline so that it sticks to targets.

Napalm burns at temperatures ranging from 800 to 1200°C and for longer than pure gasoline. Burning characteristics may also be enhanced with other additives including soap flakes and aluminium.

In addition to thrown devices, there is renewed interest in standard arson techniques. Threat devices exploiting new energy storage products that can easily be ignited, like lithium-ion batteries, may also be used to cause fires. The potential for confined vapour explosions in enclosed spaces that cause rapid fire escalation should not be discounted.

Keeping you safe!

Current tactics include focusing on enclosed spaces with restricted exits, blocking entrances and exits, and disabling fire or life safety systems, including alarms, sprinklers, risers and fire doors.

Ambushes have also been used specifically to target emergency responders using multiple attackers, targets and weapon types. The success of these approaches is illustrated through the incidents listed earlier where the injuries and death toll were typically highest in enclosed spaces like hotels and subways.

Emergency response considerations

Preventing events like these requires intelligence gathering, threat analysis and information sharing from the emergency response perspective. It should also include community preparedness activities, especially those incorporating suspicious activity reporting.

- fire
- thermal impacts
- flashovers
- confined vapour explosions
- toxic combustion products
- low oxygen levels

While the primary objective for emergency response will be protecting the civilian population, it is imperative that personnel maintain situational awareness and recognise the tactics that may be used against them. Response and tactics need to accommodate the risk of secondary attacks, which may also increase demand on resources as the incident expands in size and scope.

Prior coordination between law enforcement, fire and emergency medical services is critical to the successful resolution of FaW events. These incidents pose significant risk to emergency responders, especially in enclosed spaces where there are many hazards. These include fire, thermal impacts, potential for flashovers or confined vapour explosions, as well as toxic products of combustion and low oxygen levels.

As all pyro-terrorism events are crime scenes, evidence preservation is critical. During the investigation look for instructional materials combined with signs of precursors; document threats and other suspicious behaviours; access real-time video feeds when possible; and access area CCTV systems, alarm logs, and 911 calls. It is also important to protect yourself from contact with or breathing combustion products while investigating. Ensure that appropriate PPE and decontamination strategies are adopted in conjunction with your co-responders.

Images are courtesy of Phil Buckenham
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