### Types of Explosive Weapons

#### Rocket Artillery, especially Tube artillery (guns and howitzers)

- M198
- M110
- 2S4 (Tyulpan)
- Qassam

#### Missiles

- Tomahawk
- Soud (9K720 (Izlander))

#### Mortars

- CARDOM
- Soltam KS and K6
- L1/16
- 2B14 (Pistons)
- 60mm M-224
- MWS-81

#### Tube artillery (guns and howitzers)

- 284 (Tulipan)
- M110
- M198
- 257 (Pion)

#### Multi-Barrel Rocket Launchers (MBRL)

- BM-21 (Grad)
- BM-30 (Smerch)
- M270 MLRS
- M77 (Dzapani)
- TOS-1-MRL
- M-87 (Orkan)
- T-122 (Sakara)

#### Air-dropped bombs

- Unguided M682 (500lb)
- BLU-117 (M84)
- Guided GBU-12
- GBU-43B (MDAB)
- FAB-1500 (3307lb)
- FAB-3000 (6614lb)

#### Missiles

- Aircraft bomb
- Unguided Mk82 (500lb)
- Guided GBU-12

#### Mortars

- CARDOM
- Soltam KS and K6
- L1/16
- 2B14 (Pistons)
- 60mm M-224
- MWS-81

#### Tube artillery (guns and howitzers)

- 284 (Tulipan)
- M110
- M198
- 257 (Pion)

### Large Blast or Fragmentation Radius

A large amount of explosive substance can create a powerful blast wave. Fragments (pieces of the casing and debris) can be projected over a long distance.

### Inaccuracy of Delivery

An explosive munition may land anywhere within a wide area.

### Multiple Warheads or Firings

A number of explosive munitions is fired or released and spreads to cover a wide area.

### Factors that produce wide area effects

There is broad agreement that wide area effects from explosive weapons result from three main characteristics, either individually or in combination. These effects are cumulative, with blast and fragmentation effects always present and with inaccuracy of delivery and the use of multiple warheads, where applicable. Extending those effects across a wider area. As well as increasing the likelihood of direct civilian deaths and injuries, the combination of these effects also results in the destruction of civilian property and infrastructure vital to the civilian population, with longer-term implications for public health and development (sometimes called ‘tertiary’ or ‘reverberating’ effects).

This table highlights some common types of explosive weapon systems that have caused grave civilian harm. It does not aim to be exhaustive.

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**Case studies of harm**

- On 10 July 2014 - without warning - the house of the Al Hajj family in Gaza was bombed, killing all 8 residents, including women and children. The explosion completely destroyed the house and damaged several houses nearby, causing injury to 19 people. The Human Rights Council (HRC) states that the attack was likely aimed at one of the residents of the house, and was carried out with a 500lb or 1,000lb aircraft bomb. Read more in the report by the HRC: [https://bit.ly/2Alozm](https://bit.ly/2Alozm)

- On 17 March 2011 at least six 81mm mortar shells were fired at the military camp in the Abobo neighborhood of Abidjan, killing at least 25 people and injuring more than 50. It was reported that these projectiles were fired from a launch tube into the air that then hit a location that might be several kilometres away. For some common types at a distance of 7km, the chance of a projectile landing within 100m from the target might only be just over 50%.

- On 24 January 2015 31 people were killed in a BM-21 Grad strike on the city of Mariupol in Ukraine. Within two minutes a salvo of almost 100 rockets struck the city, striking i.a. schools, markets, shops and homes. The area covered by the attack was 817 metres across and 1380 metres wide. A number of artillery guns (a ‘battery’) is typically used to deliver multiple rounds at a target. Because of the uncertainty of individual firings, multiple firings might be necessary to have confidence of affecting the intended target. As multiple firings slightly change the gun’s temperature and placement this can further extend the area effects.

**References**

Basic structure of wide area effects

1. Combined blast and fragmentation radii of a single explosive weapon centred where the weapon actually detonates.

2. Blast and fragmentation radii are greater for a weapon with larger explosive content.

3. Inaccuracy of delivery means those blast and fragmentation effects will occur somewhere within a larger area. Where within the wider area the actual effects will occur cannot be precisely controlled. Repeated firings will land in slightly different locations.

4. Where multiple warheads are used, even weapons with smaller individual blast and fragmentation radii can create effects over a wide area.

Recommendations

As a humanitarian priority, we call upon states to draw up an international political declaration to reduce harm from the use of explosive weapons in populated areas, based on the following key elements:

- A commitment to stop the use of explosive weapons with wide area effects in populated areas;
- A commitment to assist victims of explosive weapons and affected communities;
- A commitment to gather and share data on the use and impact of explosive weapons in populated areas, including the recording of casualties, and to share policy and practice aimed at enhancing civilian protection;
- A commitment to translate the key elements of such a political commitment into national policy and action.

Sources


Tactics, Techniques, and Procedures for the Field Artillery Battalion, US Department of the Army, Field Manual (FM) 3-09.21, 22 March 2001


Images:


Conclusion

Increasing political constraints on the use of explosive weapons that have wide area effects in populated areas would be a major step forward for the protection of civilians in armed conflict. Establishing an expectation that greater restraint should be applied in the use of explosive force in such contexts will help prevent the bombing and bombardment of people in their homes, schools and hospitals. Whilst fighting in populated areas will always put civilians at risk, the use of explosive weapons with wide area effects in these contexts makes harm to civilians almost inevitable. A political commitment to curb such use is operationally practicable and would be fully consistent with the purpose and rules of international humanitarian law.

Actors that take the protection of the civilians seriously would not use wide area explosive weapons in areas where civilians are concentrated. Despite the variety and complexity of technologies and circumstances involved, such a policy denotes a simple position that speaks directly to the key technological characteristics that put civilians in harm’s way. Promoting such a policy will also promote restraint even amongst those actors that refuse to endorse such a position directly. Such restraint is desperately needed by civilian populations worldwide, now and in the future.