

## **Explosive remnants of war: Protecting civilians through an additional protocol to the 1980 Convention on Certain Conventional Weapons**

by **PETER HERBY AND ANNA R. NUITEN**

Large numbers of civilians quite predictably become “accidental” victims each year from a variety of unexploded munitions which no longer serve any military purpose. These munitions include anti-personnel mines, which are now widely prohibited, as well as anti-vehicle mines, submunitions from airborne cluster bombs or land-based systems and other unexploded ordnance (UXO). The frequent post-conflict death and injury from submunitions and other UXO is a result of their failure to explode on impact as they are designed to do, whereas that from anti-vehicle mines is a result of their design.

Although the international community has made significant progress in addressing the humanitarian problems caused by anti-personnel mines (e.g. through the 1997 Convention on the prohibition of anti-personnel mines<sup>1</sup>), the broader problems, caused by other “explosive remnants of war” have not been addressed, although there has been considerable support expressed for stricter restrictions on the use of anti-vehicle mines. This article will show that the large number of civilian casualties caused by unexploded ordnance other than anti-personnel mines is both predictable and largely preventable. It suggests that the most appropriate tool for addressing this issue would be the adoption of an additional protocol on “explosive remnants of war” in the context of the planned Review Conference of the Convention on Certain Conventional Weapons (CCW)<sup>2</sup> in December 2001.

The contents of this article are based upon research conducted or commissioned by the International Committee of the Red Cross in the year 2000. The research analysed the human costs of mines, cluster bomb submunitions and other unexploded ordnance

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in Kosovo in the year following the end of the conflict in the province, surveyed the use and effects of submunitions on a more global basis and considered the possible reasons for the high failure rate of submunitions in conflicts over the past 30 years. The ICRC also examined the effects of anti-vehicle mines on its own relief operations and those of National Red Cross and Red Crescent Societies, and their implications for civilian populations.

## **Remnants of war — their effects and current regulation**

### **Anti-vehicle mines**

*Effects* — Anti-vehicle mines have a major impact on civilian populations. However, this impact is qualitatively different than that of anti-personnel mines — the most disturbing effects of which are the maiming or killing of large numbers of individual civilians. In contrast, the most troubling effects of anti-vehicle mines are the denial of humanitarian assistance to large numbers of civilians in both conflict and post-conflict situations and the limitation of movement of affected populations. By making the transportation structure, particularly roadways, unusable, anti-vehicle mines all too often prevent essential foods, medicines and other relief supplies and services from reaching vulnerable populations often in desperate need of such help.

In 1993 one such vulnerable population consisted of 100,000 to 120,000 people in communities isolated for months by the conflict in Bosnia-Herzegovina. On 12 October of that year a convoy of 14 ICRC trucks loaded with food and blankets set out to reach the affected communities of Maglaj and Tesanj. The mission was cancelled when the armored lead vehicle hit an anti-vehicle mine and all vehicles were forced to return to their base.

<sup>1</sup> Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction, Oslo, 18 September 1997.

<sup>2</sup> Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects. Geneva, 10 October 1980.

This scenario is repeated year after year in a variety of countries as the ICRC, United Nations and other humanitarian agencies are forced to abandon civilian populations due to the presence or suspected presence of anti-vehicle mines. The result is that the humanitarian assistance, which civilians have a right to expect under the Fourth Geneva Convention of 1949 and the Additional Protocols of 1977, is not available. In addition to this denial of assistance, many civilians lose their lives from anti-vehicle mines on transport routes as they attempt to continue or rebuild their lives in war-torn lands.

A preliminary survey of the ICRC and National Red Cross and Red Crescent Society operations reveals a total of 20 incidents involving anti-vehicle mines in 11 countries during the 1990s. Each and every one of these incidents resulted in the cancellation of relief operations for already vulnerable populations. A total of 16 staff were killed and 63 injured in these incidents. When relief had to be delivered by air due to mined roadways the financial costs to the ICRC increased between 10 and 20 times.

*Current regulation* — The use of anti-vehicle mines is subject to the general rules of customary international law and is also covered by the original and amended versions of Protocol II of the CCW.<sup>3</sup> However, limitations on the use of anti-vehicle mines in this Protocol are weak, of a general nature and have often simply been ignored in actual conflicts. Most mine-affected States are not party to Protocol II.

Although they are indiscriminate in nature, anti-vehicle mines can, in theory, be used in a discriminate manner if placed in marked minefields and monitored by military personnel. However, the increasing use of remotely delivered anti-vehicle mines will make the discriminate use of these weapons much more difficult and unlikely. Considerable support was generated during the first CCW Review Conference (1995-96) for requirements that anti-vehicle mines be detectable and self-destructing. However, a decision was eventually

<sup>3</sup> Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices (Protocol II). Geneva, 10 October 1980. Protocol on Prohibitions or Restrictions

on the Use of Mines, Booby-Traps and Other Devices as amended on 3 May 1996 (Protocol II to the 1980 Convention as amended on 3 May 1996).

made to postpone discussion on these weapons and to concentrate on anti-personnel mines.

### **Submunitions and other unexploded ordnance (UXO)**

*Effects* — Submunitions are small bomblets that are delivered by a cluster bomb or artillery shell. They are dispersed in large numbers (varying from tens at a time to 600–700 per bomb) and have the capacity to spread destruction over an area as large as a football field — which is considered their military advantage. This military advantage, however, has important humanitarian implications.

During conflict, because submunitions are area weapons, there is a heightened risk of indiscriminate effects of attacks. When targeting is imprecise the “collateral effects” of missing the target can be far greater than with traditional ordnance. As with other gravity ordnance (dumb bombs), the precision of submunition delivery will depend on weather (wind and air density), drop height and drop speed. When used against military objects located in civilian areas those submunitions which fail to explode are an immediate threat to the civilian populations concerned, rendering dangerous such essential activities as obtaining food, water and medical care and blocking relief activities on behalf of such populations.

Following their use unexploded submunitions can pose a massive clearance problem and significant threat to civilians for many years. Failure rates (i.e. the proportion of munitions which fail to explode on impact) tend to be high due to factors such as poorly designed fuses, manufacturing problems, incorrect delivery and the difference between the ideal conditions used in testing and the reality of the actual target areas. The fuses are normally designed to function on impact with hard targets whereas actual strike surfaces often include soft ground, trees, mud, vegetation, etc.

During the war in Indochina, an estimated 285 million submunitions were dropped resulting in millions of unexploded submunitions.<sup>4</sup> The lowest estimates of 5% failure rates suggest that

<sup>4</sup> Eric Prokosch, *The technology of killing, and other weapons*, London, 1995, p. 114.  
*A military and political history of antiperson-*

14 million submunitions were left unexploded,<sup>5</sup> although credible estimates are much higher (up to 30% failure rates).<sup>6</sup> As of 1996 these remnants of war are reported to have taken more than 10,000 victims, of which around 31% are children.<sup>7</sup> The ICRC recently received a report from the clearance agency UXO Laos indicating that in just the 27-month period, from 1 January 1998 through 31 March 2000, some 80,000 submunitions had been cleared.<sup>8</sup> However, millions more remain and continue to inflict casualties nearly 30 years after the conflict.

Given the well-known fact of high failure rates in Indochina, it would have been advantageous if the problem of cluster submunitions could have been resolved before their use in Kosovo. However, in Kosovo, the territory of which is about one third of the size of Belgium, NATO acknowledges dropping 1,392 cluster bombs, containing some 290,000 submunitions,<sup>9</sup> while the United States Department of Defense stated that 340,000 submunitions were dropped. According to NATO's own estimate of a 10% failure rate, some 29,000 unexploded submunitions remained in the area, many in or near populated areas. Others, however, estimate failure rates at 3% to 26% per canister, with the average failure rate falling between 10% and 15%.<sup>10</sup>

Casualty data collected by the ICRC in the year following the Kosovo conflict indicate that cluster bomblets are, along with anti-

<sup>5</sup> *Ibid.*

<sup>6</sup> See Colin King, Associates (UXO consultants), referring to talks with B. Lark, former technical adviser to UXO Laos, and further stating that this is a conservative estimate based on the *UXO Laos post-conflict impact survey*, which states that "up to 30% of the more than 2 million tons of ordnance dropped on Laos failed to explode".

<sup>7</sup> King states that these figures are based on a national survey conducted by Handicap International in 1997.

<sup>8</sup> Lao National UXO Programme (UXO Laos), fax containing answers to a questionnaire sent out by the ICRC, Vientiane, 18 May 2000, p. 3.

<sup>9</sup> *NATO dropped cluster munitions*, document presented by NATO to the UN Mine Action Coordination Centre (UNMACC) in Pristina/Prishtine, undated [1999]. See also *Mine Action Coordination Centre Comprehensive Update and Plan for the Year 2000*, Update as of 5 November 1999, UNMACC, Pristina/Prishtine, November 1999.

<sup>10</sup> Based on ICRC talks with a KFOR explosive ordnance disposal specialist, 10 February 2000. This figure is also used formally in KFOR Mine Awareness Briefings.

personnel mines, the leading cause of mine/UXO-related death and injury in Kosovo. Cluster bomblets and anti-personnel mines accounted for 73% of the 280 incidents individually recorded by the ICRC between 1 June 1999 and 31 May 2000, with each type of ordnance responsible for 102 deaths or injuries (i.e. 36% of casualties for each). In addition, as compared to those killed or injured by anti-personnel mines, those injured or killed by cluster bomblets were 4.9 times as likely to be under age 14.<sup>11</sup> Incidents involving cluster munitions were also much more likely than landmines to result in death or injury to several people. The high cluster bomblet casualty rate for children may be because they find the brightly coloured munitions lying on the surface attractive.

According to the database of the UN Mine Action Coordination Centre in Kosovo, which contains casualty reports from the ICRC and other organizations, the total number of UXO-related casualties during this one-year period was 492 persons.<sup>12</sup> This corresponds to an annual rate of approximately 31 per 100,000 population. The comparable rate for a heavily mine-affected region in northwest Cambodia (during a period without an influx of refugees) was 61 casualties per 100,000.<sup>13</sup>

Experience shows that whereas civilians generally show great respect for mines and will avoid mined areas whenever possible, they tend to underestimate or ignore the threat of cluster bomb submunitions, which leads to even more victims. This may be due to the fact that submunitions are perceived as “duds”, and therefore not a threat.

In addition to killing and injuring individuals, unexploded submunitions cause significant socio-economic problems. First, unexploded submunitions prevent people from returning to their homes,

<sup>11</sup> Information provided by Dr. David Meddings, Epidemiologist, Unit of the Chief Medical Officer, ICRC. The 95% confidence interval is (2.3, 10.3).

<sup>12</sup> The more comprehensive UNMACC data also show that among the 492 casualties from UXO reported to its database from June 1999 through May 2000, cluster bomblets and anti-personnel mines were the leading cause

of death and injury — with similar numbers of casualties resulting from each. “Other UXO”, some of which may in fact be cluster bomblets or anti-personnel mines, represent a significant proportion (27% to 35%) of casualties.

<sup>13</sup> Information provided by Dr. David Meddings, Epidemiologist, Unit of the Chief Medical Officer, ICRC

hamper the reconstruction of urban areas and infrastructure, which will in its turn hinder development and external investment. Secondly, amputees and the injured put a heavy toll on medical infrastructure. Since most victims are adult men and children, the economically active population will be diminished for two generations. Thirdly, the agricultural capacity will diminish because access to land is hindered by the presence of unexploded submunitions. Cattle and other animals also fall victim to submunitions — which reduces the means of survival for a population depending on agriculture. Even worse, economic necessity often drives people to work the land, despite the threat of unexploded submunitions, with more casualties as a result. Fourthly, the natural environment will be severely affected for many years.<sup>14</sup>

Submunitions, which are often highly unstable and dangerous, are more difficult to clear than mines and other ordnance for a number of reasons. Submunitions may never be removed for destruction, but must be destroyed individually *in situ*. In addition, mechanical clearance methods cannot be used, as submunition explosions are so powerful they are likely to destroy the clearance machine. While commonly used for the clearance of mines, dogs cannot be used for detection since they are prone to touching the submunition while sniffing it — which may trigger detonation. Added to this, many submunitions contain extremely dangerous multi-directional fuses, which make the submunition detonate if it is pushed or moved in any direction. Lastly, standard electromagnetic (mine) detectors cannot be used since many submunitions use electromagnetic fuses and will be detonated by such a detector. Clearance of unexploded submunitions is an extremely delicate and dangerous task, even more dangerous than mine clearance.

*Current regulation* — The use of submunitions is currently subject only to the general customary rules of international humanitarian law, which have not proven to be specific enough to reduce the human toll taken by these weapons.

Specific regulation is needed for the following reasons:

<sup>14</sup> Arthur Westing (ed.), *Explosive remnants of war: mitigating the environmental effects*, Publication of SIPRI & UNEP, Taylor & Francis, London, 1985.

- the predictably high failure rates of submunitions;
- their impact on wide areas;
- their widespread and long-lasting effects;
- the historical pattern of their use in or near civilian populations and their major impact on such populations;
- the trend of major industrialized countries to rely primarily or exclusively on air power to achieve their military objectives which suggests that cluster submunitions will be used in large numbers in the future.

Such regulations should also be applied to other munitions which fail to explode on impact and have the same effects as submunitions.

### **Towards a fifth protocol to the 1980 Convention on Certain Conventional Weapons**

#### **A proposal**

The ICRC is proposing a new additional protocol to the 1980 Convention on Conventional Weapons which would address the humanitarian problems caused by explosive remnants of war. Such a protocol would deal comprehensively with the use and clearance of munitions — including anti-vehicle mines, submunitions and other munitions.

Possible key elements of a new protocol, currently being discussed with governments by the ICRC, are as follows:

- The central principle that those who use munitions which remain after the end of active hostilities are responsible for clearing or providing assistance to ensure the clearance of such ordnance. This is similar to what is required for landmines and booby traps in amended Protocol II of the CCW.

The responsibility could be fulfilled by a variety of measures including, for example, by equipping munitions and submunitions with effective self-destruction mechanisms and ensuring that munitions are detectable. However, if self-destruct mechanisms are not used or do not function the responsibility for clearance should remain.



- The principle that technical information to facilitate clearance should be provided to mine clearance organizations immediately after the end of active hostilities in an affected area. This principle has also been accepted for landmines and booby traps in amended Protocol II.
- The principle that those who use munitions likely to have long-term effects should provide warnings to civilian populations on the dangers of such ordnance, as is already the case for landmines and booby traps in the original and amended versions of Protocol II.
- For submunitions (whether delivered by air or ground-based systems) — a prohibition of use against military objects located in concentrations of civilians. This would be similar to the rule already accepted for incendiary weapons in Protocol III of the CCW and a specific application of the rules contained in Article 51 of 1977 Additional Protocol I which prohibits indiscriminate attacks.<sup>15</sup>

### Precedents

Such a proposal would not be the first addressing the problems caused by submunitions and other unexploded ordnance. Recent history has seen several attempts to address this issue. Following the use of cluster submunitions in the Indochina wars, Sweden and six other States<sup>16</sup> made a proposal to the Conference of Governmental Experts in Lucerne in 1974, later to be slightly amended and followed by 13 States<sup>17</sup> in Lugano, in which it was stated that “[a]nti-personnel cluster warheads (...) are prohibited for use”.<sup>18</sup> Other States resisted this proposal. They claimed that anti-personnel cluster weapons are neither indiscriminate nor cruel. However, it is important to note that States were speaking here only of submunitions designed for their anti-personnel effects.

In 1983 the UN General Assembly endorsed the recommendations of a report to the UN Environment Programme on explosive remnants of conventional war in its Resolution 38/162 of 19

<sup>15</sup> Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons (Protocol III). Geneva, 10 October 1980.

<sup>16</sup> Sweden, Egypt, Mexico, Norway, Sudan, Switzerland and Yugoslavia.

<sup>17</sup> Algeria, Austria, Egypt, Lebanon, Mali, Mauritania, Mexico, Norway, Sudan, Sweden, Switzerland, Venezuela and Yugoslavia.

<sup>18</sup> CDDH/IV/201, Article II (Anti-personnel fragmentation weapons).

December 1983. The recommendations, *inter alia*, propose co-operation between States in the area of collection, classification, dissemination of information on remnants of war, installing a database for this purpose and the promotion of technical assistance and co-operation in clearing. Most importantly they state that “[h]igh explosives should be designed to have built-in mechanisms that render the munitions harmless in due course”<sup>19</sup> and that “[t]he important issues of responsibility for damage and compensation should not be minimised or neglected. Fair compensation must be considered in the light of damage and suffering entailed by remnants of war”.<sup>20</sup>

A May 1994 ICRC expert meeting on certain weapon systems and on implementation mechanisms in international law also addressed the issue of submunitions. An informal Australian paper presented to this meeting stated that during conflict submunitions may be used as long as they are used in conformity with the international humanitarian law rules on targeting. It added, however, that unexploded ordnance in post-conflict situations forms such a hazard to the civilian population that a self-destruction feature on submunitions should be obligatory.

In September 2000 the ICRC presented its concerns and proposals to States at an expert meeting on “Explosive Remnants of War” held in Nyon, Switzerland. The discussions made clear that there is a widespread recognition of this problem and of the need to begin addressing the issue in the context of preparations for the 2001 CCW Review Conference. Subsequently, statements by a number of countries in the First Committee of the UN General Assembly (2000) called for consideration of this issue in the context of the 2001 CCW Review Conference.

During the first Preparatory Committee meeting for the 2001 Review Conference, on 14 December 2000, some 30 States<sup>21</sup> supported a proposal to discuss the remnants of war issue in detail at the April

<sup>19</sup> The report, prepared by a group of eight international experts, forms part of UN General Assembly Doc. A/38/383 (19 October 1983), pp. 6-28.

<sup>20</sup> *Ibid*

<sup>21</sup> Including all European Union States, Argentina, Bulgaria, Canada, Cambodia, China, Hungary, New Zealand, Mexico, Norway, Peru, South Africa, Switzerland and the United States.

2001 Preparatory Committee meeting with a view to taking a decision at the December Review Conference on establishing a mandate for work on this issue.

### **Conclusions**

It is encouraging that governments appear ready to begin addressing the long-standing problems caused by explosive remnants of war. However, many difficult issues will need to be addressed, including the nature of responsibility States are willing to accept, the types of information needed to facilitate explosive ordnance clearance and to protect civilian populations, and technical issues concerning the possible integration of self-destruct mechanisms in a variety of munitions.

The scale of the humanitarian problems of explosive remnants of war is likely to grow dramatically in the future. The increased ability to rapidly deliver large amounts of ordnance over greater and greater distances means that even conflicts lasting only a few days can leave huge numbers of unexploded munitions. Protracted conflicts will have even greater effects. Furthermore, as cluster bombs and land-based delivery systems for submunitions become more readily available and proliferate beyond the few countries which currently use them, these weapons and their associated humanitarian problems will occur in more and more regions of the world.

Although civilian casualties in armed conflicts are regrettably not always avoidable, a large proportion of the deaths and injuries from explosive remnants of war in the post-conflict context are both predictable and preventable. It is important that governments, humanitarian agencies, the military, the mine-clearance community and other interested organizations use the 2001 CCW Review Conference, and the negotiations which should follow, to engage in an intensive effort to achieve a dramatic reduction in the senseless death and injury inflicted by explosive remnants of war.