

Other forms of damage tend to be permanent. It is one thing for trained soldiers to suffer blindness where countermeasures, medical procedures and knowledge of what happened may mitigate the impact of the wounding. It is something else for civilians not trained to identify what may or has happened. Damage is compounded when no medical treatment is available and where eye problems already exist – a situation which may be considered the norm in many developing countries. It should be noted that blinding as an incidental or collateral effect of the legitimate employment of laser beams on the battlefield is not covered by the CCW Prohibition on Blinding Lasers. In some circumstances, it may be difficult to determine if these systems are being deliberately employed for the purpose of blinding. According to one source, the Iranian military suffered over 4,000 documented eye casualties from Iraqi laser systems during the Iran/Iraq war, something which suggested a strong probability that some laser systems were being specifically used to inflict eye casualties<sup>99</sup>. In a controversial case involving a pilot in the Canadian Armed Forces, a Russian cargo vessel overflown by a Canadian helicopter allegedly used a laser gun of unknown characteristics to injure the eyes of both the pilot and an accompanying US Navy Lieutenant.<sup>100</sup> Laser blindness, deliberate or otherwise, will be a concern for all during future conflicts, particularly as new generation systems are developed and counter-countermeasures are introduced.

There are very few examples of specifically designed anti-personnel laser weapons. The Chinese are the only identifiable state that has openly marketed an offensive anti-personnel laser – the ZM-87 (capable of flash blinding out to 10 kilometres).<sup>101</sup> The United States seems to be straddling the fence. According to some, the U.S. is re-designating or retooling certain systems as dazzlers. Two articles refer to the Sabre 203, a device mounted on an M-16 rifle and capable of interfering with vision out to a range of 300 metres. Another device is a Laser Countermeasure System capable of blinding out to one kilometre.<sup>102</sup> Whether these are true anti-material weapons developed to neutralize optical sights or whether they are designed simply to incapacitate the users of those sights may be difficult to answer. The US Stingray is a combat protection system designed to enhance survivability against enemy optical devices. It uses a laser to prevent enemy personnel from employing battlefield optics by threatening potential eye injury to anyone using such a system at the time of the Stingray's deployment. It is a scout platoon level system for use by battalion commanders.<sup>103</sup>

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<sup>99</sup> See: [http://fas.org/spp/military/docops.defense/97\\_dtap/weapons/ch100303](http://fas.org/spp/military/docops.defense/97_dtap/weapons/ch100303)

<sup>100</sup> For details see Gary Dimmock, "Military Refuses to Believe Laser Injured Pilot," *Ottawa Citizen* (Tuesday, 17 November 1998), p. A5., and Gorka, "Assuming the Offensive," p. 44.

<sup>101</sup> Gorka, "Assuming the Offensive", p. 44; Hillaby, "Directed Energy Weapons," p. 2.

<sup>102</sup> See: Gorka, "Assuming the Offensive", p. 45 and Vincent Kiernan. "Dazzling vs. Blinding Laser Weapons: The Debate is On," *Optoelectronics World* (October 1998), at <http://www.lfw/archive/1998/101/10wr.html>

<sup>103</sup> See: [http://fas.org/spp/military/docops.defense/97\\_dtap/weapons/ch100303](http://fas.org/spp/military/docops.defense/97_dtap/weapons/ch100303)