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## **DEVELOPMENT OF A MANNEQUIN FOR ASSESSMENT OF BLAST INJURIES AND LETHALITY**

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A growing number of conflicts have now seen the use of a novel family of weapons, known as Enhanced Blast Weapons (EBWs). These weapons use pressure and heat to damage targets instead of fragmentation or penetration effects employed in conventional weapons. EBWs are characterized by higher temperatures and by blast pressures of a longer duration than traditional high explosives. This represents a serious hazard for today's warfighters since current protection systems were not specifically designed to defeat EBWs. While there is an immediate need to increase the level of protection against this threat, it is required first to acquire a better understanding of the weapons effects on the human body to develop a reliable procedure for performance assessment of protection systems. Current efforts, lead by Defence R&D Canada Valcartier, include the development of a physical surrogate identified as Mannequin for the Assessment of Blast Injuries and Lethality (MABIL) that will allow personal protection systems to be evaluated. The first outcomes of the development are presented. For this project's phase, priority was given to auditory injury caused by blast overpressure, head and torso injuries induced by global body acceleration and impact, and eye injuries from optical radiation. The mechanisms associated with the injurious effects of EBWs, physical parameters allowing injury prediction, and human tolerance information are described. Prototype versions of the surrogate were fabricated and evaluated under blast loading conditions. Experimental results and their potential impacts on the following development phases of MABIL are reviewed.