Blast Exposure Analysis

Assessed Injury Risk from Blast Exposures Transmitted to US Marine Corps Gun

The Blast Overpressure-Health Hazard Assessment (BOP-HHA) version 2.0 software analyzed data collected during tests conducted at the Aberdeen Test Center (ATC) in May 2016. This quantitative risk assessment, performed by the Army Public Health Center, characterized blast exposures produced by combustion of densified propellant when rounds were fired from the M724A1E1 Shoulder-launched Multipurpose Assault Weapon (M724A1E1 SMAW) and yielded hazard severity and probability estimates for the gunner and assistant gunner firing under three conditions involving different propellant mixtures and round conditioning temperatures (Figure 1). Data collected from this test will guide decision making during development. Specifically, results of toxic gas sampling and the blast overpressure (BOP) analysis were used to determine the maximum number of rounds that crewmembers could fire without incurring significant injury risk from this new system. Test results were used to select a densified propellant mixture that will emit less BOP, permit firing from within enclosures and confined spaces, and reduce injury risks to Service Members/operators firing the M724A1E1 SMAW.

FIGURE 1: Pictures from Adapting SMAW to Urban Fighting Again, A Densified Propellant for Firing from Enclosures (Credit: Diana Bragunier & Matthew J. Sanford Marine Corps Gazette • October 2015)