

NON AUDITORY RISK ASSESSMENT FOR FRIEDLANDER BLAST WAVES

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Soldier exposure to blast overpressure (BOP) generated by the firing of weapons is an important military occupational health concern. The risk of injury to auditory structures is well recognized reflected in the present safety criteria. Several animal studies have suggested that the non-auditory injury threshold is considerably above the absolute threshold exposure limit set by present US Army standards. For freefield Friedlander blast waves, non-auditory injury has been shown to be dependent on peak pressure and the positive phase impulse of blast waves as well as on the number of exposures.

This study was undertaken to determine the non-auditory injury threshold for both 25 and 100 repetitions. Laryngeal injury has been shown to precede the incidence of non-auditory injury to more functionally critical organs (i.e. pulmonary and gastrointestinal systems). Three classes of overpressure environments were studied. These were characteristic of BOP environments around mortars, light weapons, and heavy artillery. The data was pooled for each of the classes to a single limiting point where risk of non-auditory injury was minimal. A linear extrapolation function was performed between points for BOP conditions which were not studied. The resulting curves can be used to define BOP conditions which were not studied. The resulting curves can be used to define BOP exposures which carry minimal risk of non-auditory injury.