EFFECTS OF EXPLOSIVES AGEING ON MUNITION RESPONSE TO IM THREATS

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This poster illustrates the outputs from an expert working group set up under the auspices of the Insensitive Munitions European Manufacturers Group (IMEMG), to assess the likely effects of explosives ageing on the response of munitions to IM threats.

The methodology developed to analyse the potential effects of explosives ageing and review appropriate test data was a logic tree format of the type used in fault tree analysis. The logic tree diagram was used to provide a pictorial representation of the ways in which changes to explosive compositions due to the effects of ageing could contribute to a higher order response of the munition to an IM stimulus. The logic tree also illustrates which small scale, charge scale and munition scale tests can be used to assess changes in explosives characteristics which could affect IM response.

The analysis initially focused on polymer bonded explosive compositions, and results from available test data were reviewed and assigned to the logic tree to draw some initial conclusions on the effects of ageing on the IM characteristics of these materials.

The assessment also identified which tests offer the most value in terms of their ability to detect significant changes in material properties, and highlighted testing capability gaps in typical explosives qualification, munition surveillance and life extension test programmes.

The work has now moved on to consider the effects of ageing on melt-cast explosive compositions, and how this differs from the cast-cure material previously considered.

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