GROUP OF GOVERNMENTAL EXPERTS OF THE STATES PARTIES TO THE CONVENTION ON PROHIBITIONS OR RESTRICTIONS ON THE USE OF CERTAIN CONVENTIONAL WEAPONS WHICH MAY BE DEEMED TO BE EXCESSIVELY INJURIOUS OR TO HAVE INDISCRIMINATE EFFECTS

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Explosive remnants of war

Working Group on Explosive Remnants of War

MUNITIONS - A METHOD TO REDUCE THE RISKS ASSOCIATED WITH EXPLOSIVE REMNANTS OF WAR (ERW)

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GENERAL APPROACH

1. Many ideas have emerged from the analyses carried out in the groups of military experts on explosive remnants of war (ERW). Concepts such as levels of confidence or risk evaluation, ideas or technical solutions which would enable the incidence of ERW to be reduced, have been proposed or raised.

2. France, wishing to play an active part in the work carried out by this group, has over the course of several sessions been pursuing a methodological approach whereby the emergence of ERW could be limited and their effects minimized. It has described the state of its thinking on its methodological approach on various occasions.

3. The version set out in the present paper is intended to be pragmatic and accessible for all States parties. It is aimed at offering these States an opportunity to make significant progress towards accommodation of their humanitarian concerns, without calling their defence interests into question.

4. The matrix we present is designed to reduce the incidence of ERW by means of simple, effective and evolutionary preventive measures which take account of the military, financial and technical dimensions of the various possible solutions.

5. The proposed effort covers organization of the technical operations which would enable the incidence of ERW to be reduced so as to obtain a tool that could be used both in the design or acquisition of new munitions and in the modernization or streamlining of the management of an existing stockpile. This methodological approach draws to some extent on existing tools designed to assess and regulate the reliability and safety of products supplied by a variety of countries, including France, to equip the Forces.

6. Using the proposed matrix would help a State which was interested in ensuring sound management of its stockpiles or acquiring new munitions, or both, to do so in a responsible manner. This matrix would also permit easy integration of the proposed preventive measures which have emerged or will emerge from the group of military experts on ERW.

PRINCIPLES UNDERLYING THE PROPOSED METHODOLOGY

7. Among the various proposals for reducing the humanitarian risk associated with ERW, some are essentially technical measures applicable directly to the munitions. Others, in contrast, are qualitative and relate more specifically to efforts to improve the processes of identification, production or storage. They complement the technical measures, and are vital in order to achieve the level of effectiveness sought through the application of such measures.

8. Mastering these two approaches is a prerequisite for attaining the technical goals sought, and thus addressing the humanitarian risk overall.

9. This observation leads us to propose a classification of measurements of progress made using two complementary approaches. The first approach is technical and operational in nature. The second is based on analysis of processes and seeks to ensure that these processes are so handled as to guarantee that the munitions put into service are of high quality and maintain their characteristics throughout their service life.

OPERATIONAL AND TECHNICAL APPROACH

10. The essentially technical measures which stem from a pragmatic and operational approach are directly aimed at reducing potential humanitarian risk factors. For example, they have to do with the risk posed by soil contamination or facilities for soil decontamination.

11. These risk factors may easily be associated with the elementary risk factors which have been mentioned in the work of the group of military experts. In connection with the degree of difficulty of decontamination, for example, the following should be highlighted: the detectability and ease of identification of ERW; the ease of locating contaminated areas and evaluating their extent; the ease of neutralizing ERW.

APPROACH BASED ON PROCESS ANALYSIS

12. This approach is designed to permit identification of the measures which are intended to guarantee the quality of the initial processes for the acquisition of munitions, and subsequently the quality of the process whereby such munitions are kept over time. These measures cover, for example, analysis of the processes of design, manufacture, maintenance in operational condition and management of stockpiles.

13. This approach may be broken down into three main stages: identification; production; storage.

14. Elementary characteristics are associated with each of these processes:

- For the identification process: the design stage and the qualification stage;
- For the production process: quality control in production and acceptance tests;
- For the storage process: stock management.

SUCCESSIVE EVALUATIONS OF PREVENTIVE MEASURES

15. This first stage of preventive measures is followed by a second stage, which involves rigorous but simple evaluation of the level of the preventive measures previously scheduled. This evaluation is carried out using a four-level grid.

16. The levels in this grid range from level 1 (preventive measure not applied, high risk of ERW) to level 4 (preventive measure applied in full, negligible risk of ERW).

17. Each of the preventive measures appearing in the matrices must be evaluated so as to determine its real level of application in accordance with the proposed grid. In the event of inadequate application (application classified at level 1 to 2), a new action must be identified to remedy the failure to carry out the preventive measure in question.

18. A preventive measure may be considered impossible to apply or ineffective on practical or financial grounds. In that case it may not lead to any corrective measure. However, it must be annotated with justifications in the ad hoc box of the matrix in question.

19. Whenever a preventive measure which has been deemed to have been inadequately handled leads to a corrective action being identified, the presumed effectiveness of this action must be verified. This will be done by means of a re-evaluation of the level of application of the initial preventive measure in the light of the implementation of the action.

PRESENTATION OF THE MATRICES

20. In this way the matrices furnish a full picture of the level of compliance with the preventive measures and the cost of the corrective actions, in the form of matrices.

21. These matrices are set out in the form of tables which list all the preventive measures. To each corresponds:

- A zone for evaluation of their level of application;
- Followed by a zone for supplying justifications, proposed actions and cost factors;
- And lastly a zone for re-evaluation of the application of the preventive measures for which corrective actions have been carried out.

22. In order to ensure that the matrices contain all the relevant information, the matrix relating to the technical and operational approach contains lines designed to collect technical information which is not the subject of an evaluation of the level of application of preventive measures.

23. Note that this method does not require quantified parameters, such as a confidence value linked to the number of tests carried out. This evaluation is designed to make it possible, after negotiation, to select the right confidence value to be reached depending on the type of munition. Depending on the cost of the munitions, the confidence value which can be attained on a missile, for example, is well below the value which can be attained on a medium-calibre munition. The decision to apply preventive measures is taken, inter alia, in the light of effectiveness and cost criteria. Hence what is important is to open up fundamental lines of thinking but not to impose technical solutions.

CONCLUSIONS

24. Since they are designed to facilitate the fullest possible analysis so as to manage the humanitarian risk, the use of these matrices helps to solve the problem of ERW, and is fully in line with the recommendations set out in Professor McCormack's report submitted in March 2006 at the thirteenth session of the CCW Group of Governmental Experts.

25. The use of these matrices can highlight a need for the exchange of technical information between countries acquiring munitions and countries supplying them.

26. Once supplemented in all the areas covered by the agenda of the meetings of the group of military experts, this method will offer an exhaustive analysis of preventive measures. This matrix is designed to draw on the diversity of experience available within the CCW community, before it is finalized.

Annex

Risk factor	Item for analysis	Preventive measure	Ref. No.	Level of application of preventive measures				Result/observation/ action/cost	Level after action			
				0	1	2	3		0	1	2	3
Soil contamination												
Quantity of munitions used	Indicate the type of munition and model of firing mechanism.		T1									
	Indicate the type of target against which this munition is used.		T2									
	Indicate the quantity of munitions used against a target and during a conflict.		T3									
Incidence of ERW	Evaluate the incidence of ERW from the munition using feedback on the munition or similar munitions.	Evaluate the incidence of ERW from the munition using feedback on the munition or similar munitions.	T4	/	/	/	/					
	Study the possibility of adding a self-destruction mechanism to the munition. Evaluate the expected new level of incidence of ERW for negotiation with the contractor.		T5									

Risk factor	Item for analysis	Preventive measure	Ref. No.	Level of application of preventive measures				Result/observation/ action/cost	Level after action			
				0	1	2	3		0	1	2	3
Incidence of ERW (*continued*)	Has the incidence of ERW been dealt with?	Identify all the situations in which the munitions are used. Accurately describe (mean value and variability) the properties of the target zones against which the munition is to operate. Adjust the sensitivity of the firing mechanism of the munition to the characteristics of the target zones.	T6									
Contamination hazard												
ERW sensitivity level	Can ERW sensitivity be reduced?		T7									
Attraction of ERW for the population	Can the attraction of ERW for the population be reduced?		T8									
ERW hazard level in the event of accidental actuation.	Evaluate the ERW hazard level in the event of accidental actuation using the following criteria: - …/…		T9									
	Can the ERW hazard level be reduced?		T10									

Risk factor	Item for analysis	Preventive measure	Ref. No.	Level of application of preventive measures				Result/observation/ action/cost	Level after action			
				0	1	2	3		0	1	2	3
Level of difficulty of decontamination												
Detectability/ease of identification of ERW												
Ease of locating contaminated areas and their extent												
Ease of neutralizing ERW												

Process characteristic	Item for analysis	Preventive measure	Ref. No.	Level of application of preventive measures				Observation/action/cost	Level after action			
				0	1	2	3		0	1	2	3
Design process												
Design stage	Are the levels of reliability and performance and the expected characteristics of the munition with an influence on the incidence of ERW defined?	Define these levels in the specification documents. Define a detailed life profile of the munition. Define a service life.	P1									
	Have failures in the munition which can generate ERW been dealt with?	Seek potential failures of the munition which can generate ERW and the causes thereof. Analyse these failures and causes to ensure that they are adequately dealt with in relation to the target ERW incidence level. Carry out specific reliability tests to guarantee that critical failures have been dealt with.	P2									
		Analyse the capacity of the munition to reach the end of its specified service life without any modification of characteristics which has an impact on the incidence of ERW.	P3									

Process characteristic	Item for analysis	Preventive measure	Ref. No.	Level of application of preventive measures				Observation/action/cost	Level after action			
				0	1	2	3		0	1	2	3
Qualification stage	Are the nature and quantity of tests to be carried out on the munition sufficient to achieve a satisfactory level of confidence in the results?	Provide for a sufficient number of tests to ensure that the risk of producing unrepresentative results is low.	P4									
		Conduct a mathematical evaluation of the level of confidence in the test results for negotiation with the contractor.	P5									
		Provide for tests which cover all the situations in which the munition may be involved in the phase where it may generate ERW.	P6									
		Ensure that the means of measuring and configuring the munition (in the case of tests with partially realized functions) allow the incidence of ERW from the munition to be accurately evaluated.	P7									

Process characteristic	Item for analysis	Preventive measure	Ref. No.	Level of application of preventive measures				Observation/action/cost	Level after action			
				0	1	2	3		0	1	2	3
Production process												
Quality control in production	Have manufacturing faults which can lead to the generation of ERW been dealt with?	Seek faults which can be generated in the munition by the production process and the causes of these potential faults. For faults which can lead to ERW, analyse their origin so as to ensure that they are properly dealt with in relation to the target ERW incidence level.	P8									
Acceptance tests	Can a production malfunction that may lead to the generation of faults which increase the potential incidence of ERW be detected effectively by means of acceptance tests on the batches manufactured?	Include in the acceptance tests criteria for monitoring the incidence of ERW from the munition.	P9									

Process characteristic	Item for analysis	Preventive measure	Ref. No.	Level of application of preventive measures				Observation/action/cost	Level after action			
				0	1	2	3		0	1	2	3
Storage process												
Stockpile management	Do the nature and frequency of the monitoring operations make it possible to identify faults which can generate ERW when the munition is used?	Organize scheduled stock monitoring operations comprising expert evaluations of the characteristics of the munition which can generate ERW.	P10									

Note	**Level of satisfaction**
0	The preventive measure is not applied → definite risks as to the incidence of ERW.
1	The preventive measure is only partially applied → potential risks as to the incidence of ERW.
2	The preventive measure is applied in practice → little risk as to the incidence of ERW.
3	The preventive measure is fully applied → no notable risk as to the incidence of ERW.