

**PANAMA****CONCEPT PLAN FOR THE DESTRUCTION OF EIGHT OLD CHEMICAL WEAPONS****Background**

1. The Republic of Panama has declared eight (8) old chemical weapons to be destroyed. The weapons are located on San José Island, off the Southern coast of Panama's mainland. The eight chemical munitions are World War II-era and comprised of: six (6) M79, 1,000 lb. aerial bombs believed to contain the Schedule 3 toxic chemical phosgene (CG), also known as carbonyl dichloride; one (1) M78, 500 lb. aerial bomb believed to contain the Schedule 3 toxic chemical cyanogen chloride (CK); and one (1) M1A1 Cylinder, which has been confirmed empty and rusted through and which the Republic of Panama and the Technical Secretariat (hereinafter "the Secretariat") of the Organisation for the Prohibition of Chemical Weapons (OPCW) considered destroyed. All eight of these munitions were identified in the 2002 OPCW Technical Secretariat Final Inspection Report.
2. The Republic of Panama has determined that the seven bombs are unsafe to move because of their explosive configuration, age, and austere location. These characteristics were noted in the 2002 OPCW Technical Secretariat Final Inspection Report. Relocation would pose an undue risk to workers attempting to move them and to the environment. As such, the Republic of Panama plans to destroy the munitions in place.
3. The OPCW Secretariat agrees with the Republic of Panama's assessment that there is no viable transportation option to remove the items for destruction elsewhere in the Republic of Panama or outside of the Republic of Panama. The Secretariat also agrees that there is no previously approved destruction technology available to destroy these munitions in their current condition and in this environment. The Republic of Panama has decided to destroy these munitions by explosive venting during the rainy season, using rain and humidity to promote and ensure hydrolysis and dilution. Mathematical plume modelling indicates that explosive venting of CG and CK would result in a plume that will not leave the operational area and would be further minimised by the rain. As CG and CK are non-persistent, once explosively vented, the vapour would mix with the rain to form acidic products. Acidic liquids formed would be further diluted by the rain, thus limiting environmental impacts. The Republic of Panama has determined that the destruction technology is consistent with its national laws pertaining to public health, safety, and the environment.



**Concept plan**

4. The aim of this plan is to facilitate the Republic of Panama's fulfilment of its obligations regarding the destruction of these eight old chemical weapons in a manner that assigns the highest priority to ensuring the safety of people and protection of the environment.
5. Destruction activities will take place at each individual munition location noted by the following geographic coordinates on San José Island, Panama.

Description	Lat (° N)	Long (° W)
1000lb – M79 aerial bomb	8.276111	79.115
1000lb – M79 aerial bomb	8.276111	79.11444
1000lb – M79 aerial bomb	8.276111	79.1106
1000lb – M79 aerial bomb	8.273611	79.1097
1000lb – M79 aerial bomb	8.273333	79.1103
1000lb – M79 aerial bomb	8.273611	79.1125
500lb – M78 aerial bomb	8.271111	79.1156
M1A1 Cylinder	8.267846	79.103887

6. The Chemical Weapons Convention requires the application of verification measures as well as national oversight. The Secretariat and the Republic of Panama will agree on an appropriate verification approach, which may include, to the extent possible, remote monitoring of operations.
7. Any changes to the method to be used for the destruction, as well as to the verification measures currently envisaged in the agreed detailed plan for verification will be reflected in amendments to the plan for verification. The Executive Council will also be informed of any required modifications or updates to the approved facility agreement.

**Destruction Process**

8. The destruction process will consist of three steps, which may run concurrently. Step I will entail disposal of one empty cylinder. Step II will entail explosive venting and hydrolysis of the vapours from six explosively configured bombs believed to be filled with CG and removal of munition fragments. Step III will entail explosive venting of one explosively configured bomb believed to be filled with CK, followed by rinsing and removal of remaining agent for final disposition off-site. The CK vapours will undergo hydrolysis from the rain. Details of Step II and Step III follow.
9. Disposal of cylinder: since the cylinder is already considered destroyed, its remaining metal parts will be collected and placed in containers with other metal parts from the destruction process.

10. Destruction of CG bombs

- (a) Destruction of these items will occur during rainy conditions.
- (b) Bombs will be opened with a special shape charge detonating the burster.
- (c) The CG will be released into the air, be hydrolysed and diluted by the rain, and the explosive components will be effectively destroyed. Minimal disturbance to the surrounding area is expected.
- (d) Recovered fragments will go to an offsite commercial disposal facility, the facility to be identified at a later date.

11. Destruction of CK Bomb

- (a) Destruction of this item will occur during rainy conditions.
- (b) The munition body will be opened utilising a Mark 2 shape charge that will be placed on the round in such a way so as to avoid hitting the burster, creating a ¼ inch opening in the munition.
- (c) The vapours will be vented and will mix with the rain to be hydrolysed and diluted.
- (d) Explosive Ordnance Disposal personnel will clear the direct area around the munition to stabilise it. Technical personnel will drill a larger hole in the munition to gain access to any residual solids.
- (e) Solids will be rinsed out of the munition body using an appropriate solution.
- (f) The rinsate will be collected in approved containers meeting international standards for storage and shipping for later disposal at a licensed off-site treatment, storage, and disposal facility (TSDF).
- (g) Once rinsate and solids are removed, Explosive Ordnance Disposal personnel will place another explosive charge to destroy the explosives in the munition.
- (h) Recovered fragments will go to an off-site commercial disposal facility, the facility to be identified at a later date.

12. Additional destruction information

- (a) Destruction operations will occur only during rain storms. The high humidity and rain will hydrolyse the CG and CK vapours. The resulting acids will be diluted, thus limiting environmental impact.
- (b) Metal bomb fragments remaining after explosive destruction will be collected and placed in containers for disposal at a commercial disposal facility, the facility to be identified at a later date.

- (c) The Republic of Panama will not conduct soil sampling due to the non-persistent nature of the agents involved. Any possible sampling by the Secretariat is addressed in the Verification Plan.
- (d) There is a low possibility of contaminated equipment given the agents involved. Any contamination will be washed off by rain.
- (e) Personal Protective Equipment (PPE) will be required during certain portions of the destruction operation.
- (f) Vented CG or CK will not be collected. Any remaining polymerised CK will be neutralised, rinsed, and collected. Rinsate may require pH adjustment prior to being shipped to a TSDF; per the TSDF's requirements.

Annex: Assessment Results Summary of the Declared Munitions

## Annex

## ASSESSMENT RESULTS SUMMARY OF THE DECLARED MUNITIONS

<b>2002 OPCW Tag Number</b>	<b>Munition Description</b>	<b>Probable Chemical Fill</b>	<b>Burster Present</b>	<b>Fuzed</b>
18840	M78, 500 lb. Bomb	Cyanogen Chloride (CK)	Yes	No
18854	M79, 1000 lb. Bomb with Liquid Fill	Phosgene (CG)	Yes	Yes, Tail Fuze Present
4487	M79, 1000 lb. Bomb with Liquid Fill	Phosgene (CG)	Yes	Yes, Tail Fuze Present
18855	M79, 1000 lb. Bomb with Liquid Fill and Energetic Materials	Phosgene (CG)	Yes	No
12977	M79, 1000 lb. Bomb with Liquid Fill	Phosgene (CG)	Assumed Yes	Yes, Tail Fuze Present
07674	M79, 1000 lb. Bomb	Phosgene (CG)	Assumed Yes	Yes, Tail Fuze Present
17381	M79 1000 lb. Bomb	Phosgene (CG)	Assumed Yes	Assumed Yes for Nose and Tail Fuze
12975	M1A1 Cylinder	Empty and Completely Rusted Through	No	No

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