



ORGANISATION FOR THE
PROHIBITION OF CHEMICAL WEAPONS

Working together for a world free of chemical weapons

Syrian Chemical Weapons Programme Demilitarisation

Chemical Demilitarisation Branch



Syria Declared Chemical Weapons

Total Declared Quantity: 1300 MTs

Category 1 chemicals (Approximately 1,040 MTs):

- Seven (7) different chemicals
- Chemical warfare agents or chemicals used in the binary chemical weapon systems

Category 2 chemicals (Approximately 260 MTs):

- Thirteen (13) different chemicals



Syria Chemical Weapons Storage Facilities

- **Syria** declared twelve (12) Chemical Weapons Storage Facilities (CWSFs)
- **OPCW** inventoried all declared chemicals in CWSFs
- **OPCW** verified that all declared chemicals were removed from CWSFs and CWSFs were closed
- **OPCW** verified that all declared chemicals were removed from Syria (except Isopropanol which was destroyed by dilution inside Syria)



Transfer of Chemicals Outside of Syria

- **Syria** packed and transferred chemicals from storage sites to Port of Latakia by road, using equipment provided by the Assisting States Parties and UN
- **OPCW** verified that all chemicals were inventoried, packed and moved to port of Latakia;
- **OPCW** verified the leaving chemicals in Port of Latakia:
 - Random sampling and on-site analysis for agent characterisation
 - Verification of OPCW applied seals on drums, tanks, cylinders and maritime containers used to carry chemicals
 - Visual observation



Transfer of chemicals by International Fleet





Chemicals Destruction Outside of Syria “In-kind Contribution by States Parties”

■ **Cape Ray-US vessel**

- In-kind contribution by US
- Received and completed destruction of 20 tonnes of sulfur mustard and 580 tonnes of DF

■ **Ellesmere Port High Temperature Incinerator-UK**

- In-kind contribution by UK
- Received and completed destruction of 200 tonnes of category 1 & 2 chemicals;

■ **Mexichem-UK**

- In-kind contribution by UK
- Completed destruction of 7 tonnes of HF

■ **GEKA, Munster-Germany**

- In-kind contribution by Germany
- Completed destruction of HD effluents generated from Hydrolysis on Cape Ray



Chemicals Destruction Outside of Syria “Through OPCW Tender Process”

■ **Ekokem-Finland**

- Received and completed destruction of 320 tonnes of category 1 & 2 chemicals
- Destroying DF effluents generated by hydrolysis on Cape Ray (90% progress)

■ **Veolia ES Technical Solutions- US**

- Received 65 tonnes of category 2 chemicals
- All chemicals destroyed , except a part of HF (13 tonnes)



Chemical Weapons Destruction Progress Overall

02 June 2015

- 99% of declared chemical weapons by Syria has been destroyed (inside and outside of Syria).
- 1% remaining is the 13 MTs of HF in Veolia-US because of technical difficulties in draining HF from old and corroded cylinders
- Technical remedial measures are in place to complete this process by end of 2015.



Syria Chemical Weapons Production Facilities Destruction Process

- **Syria** declared **twenty-seven (27)** Chemical Weapons Production Facility (CWPF);
- **Fifteen (15)** CWPFs were destroyed (2 declared as destroyed) during **OPCW-UN Joint mission (2013-2015)**;
- **The Technical Secretariat** has been Mandated by the **OPCW Executive Council** to verify the complete destruction of remaining **Twelve (12)** CWPFs;
 - The Executive Council decision EC-M-43/DEC.1, dated 21 July 2014
 - The Note by the Director General EC-M-43/DG.1/Rev.1, dated 21 July 2014
 - The Note by the Director General EC-M-40/DG.2/Add.1, dated 20 July 2014
 - The Revised Detailed Plans for Destruction of 12 Declared CWPFs:
 - EC-M-40/P/NAT.2/Add.1, dated 20 July 2014
 - EC-M-40/P/NAT.2/Add.2, dated 20 July 2014



Syria CWPFs Destruction Process

- **UNOPS** has been selected by the **OPCW** to provide support and services to OPCW Mission in the Syrian Arab Republic till 30 September 2015.
- **Support and services for:**
 - Contracting companies to perform destruction of declared **12 CWPFs**.
 - Contracting a company to perform installation of the remote monitoring system.
 - Destruction of declared **12 CWPFs** (aircraft hangars and underground structures).



Syria CWPFs Destruction Process

Aircraft Hangars Destruction Method:

- Aircraft hangars to be demolished to the ground level by controlled detonation/explosion.

➤ **Steps for destruction of aircraft hangars:**

- Contracting companies to perform destruction works (UNOPS contracted the local SAR companies – ASAS and Al Zein).
- Acquisition of explosives (UNOPS contracted the Jordanian company – Modern United Solution).
- Preparatory works to remove soil, doors and scraps (Al Zein).
- Drilling the holes for loading the explosives (ASAS).
- Loading explosives into the drilled holes (ASAS).
- Controlled detonation/explosion (ASAS).
- After demolition, debris of aircraft hangars to be removed (Al Zein).



Syria CWFs Destruction Process

Aircraft Hangars:





Syria CWFs Destruction Process

Aircraft Hangars:





Syria CWPFs Destruction Process

Underground Structures Destruction Method:

- 5 underground structures declared as CWPFs to be sealed by using the fill and plug destruction method.
- **Steps for destruction of underground structures:**
 - Contracting company to perform destruction works (UNOPS contracted the local SAR company – Al Zein).
 - Preparatory works to remove all scraps from underground structures (SAR).
 - Building concrete walls/plugs (Al Zein).
 - Filling declared parts of underground structure with rocks and debris (Al Zein).
 - Installation of remote monitoring system into the built concrete walls.
 - In four underground structures.
 - Procurement of remote monitoring system (OPCW contracted Aquila Technologies).
 - Installation of remote monitoring system (UNOPS contracted Al Zein).
 - Periodic inspections and repair services of remote monitoring system (OPCW contracted Al Zein).



Syria CWFs Destruction Process

Underground Structures:





Syria CWPFs Destruction Process

Underground Structures:

- Two loops of fiber optic cables are embedded, in conduit, inside each interior plug.
 - Each fiber optic cable will be connected to one EOSS seal.
 - The fiber optic cable will be constantly illuminated (short random pulses) by the Light Emitting Diode (LED).
 - The fiber optic cables is buried into the interior plug in a random pattern.
 - An interruption of any of the light pulses will generate an alarm message.
 - The fiber optic cable will originate and terminate at the EOSS seal which will constantly provide a status to control station to determine if any fiber optic cable or EOSS seals have been tampered or if any of the EOSS seals have lost the power.
 - EOSS seals will be connected to the control station via communication cable.



Syria CWPFs Destruction Process

Underground Structures:





Conclusions

- **OPCW since November 2013:**
 - Inspected all Syrian Chemical Weapons Storage Facilities and verified that all were emptied
 - Verified that 100% of declared chemicals were either destroyed in Syria or removed from its territory
 - Verified that 99% of removed chemicals have been destroyed
 - Verified that all accessible Chemical Weapons Production Facilities were inspected and disarmed;
 - Verified that **nineteen (19) out of twenty-seven (27)** of production facilities were destroyed and the rest are planned to be destroyed by 2015



ORGANISATION FOR THE
PROHIBITION OF CHEMICAL WEAPONS

Working together for a world free of chemical weapons

Thank You