



Operational Requirements, Criteria and Analysis Strategy for an OPCW-Designated Laboratory

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Chemical Warfare Agents Diagnosis and Verification Laboratory

INTRODUCTION

01

CHEMICAL WARFARE AGENTS

Chemical Weapons Convention (CWC)
Organisation for the Prohibition of Chemical
Weapons (OPCW)

02

DESIGNATION

OPCW Designated Laboratories
Designation Criteria
Analysis Strategy

03

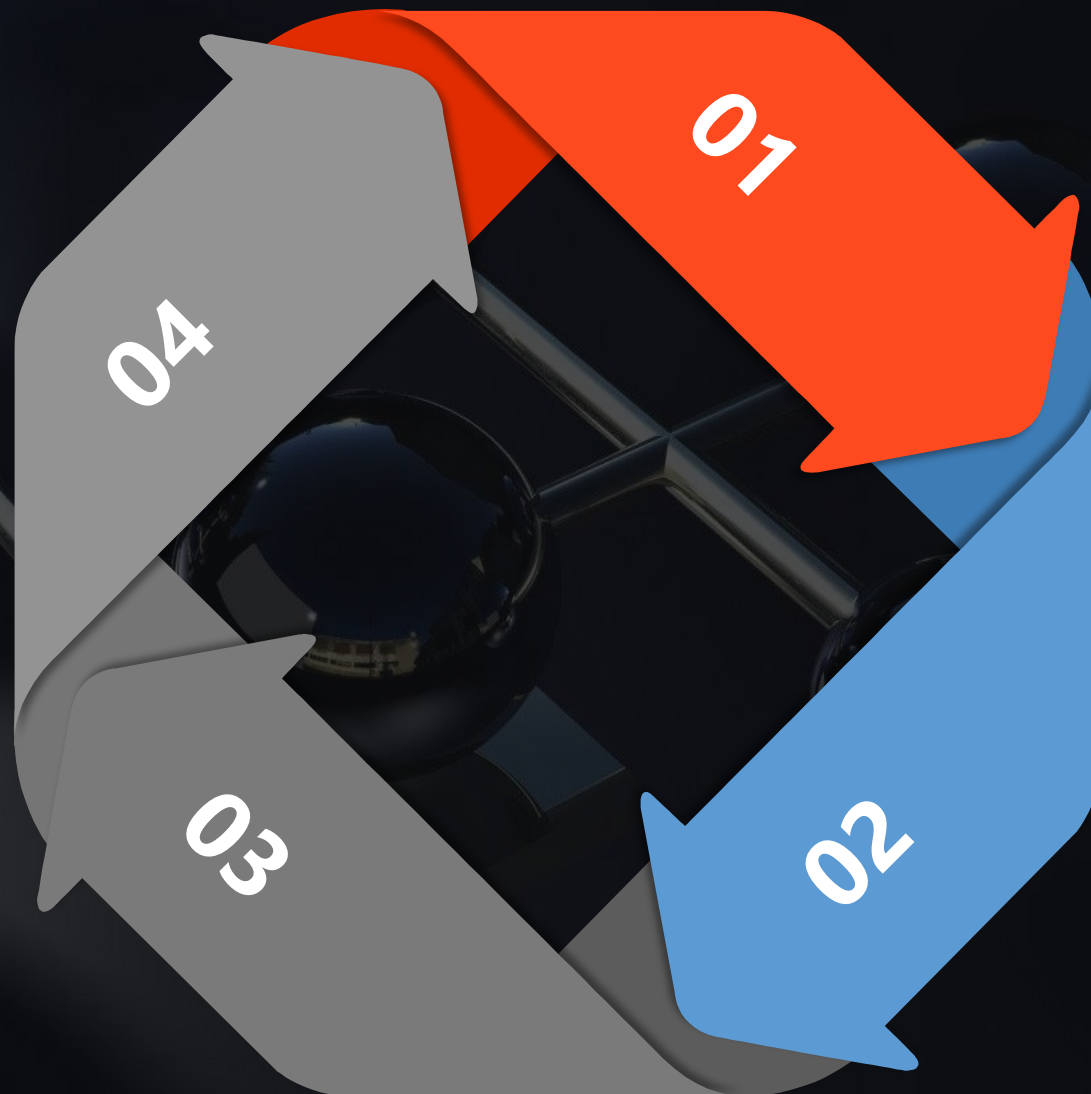
OPCW PROFICIENCY TESTS

Reporting
Scoring of Test Results
Benefits

04

CONCLUSION

CWAs Diagnosis & Verification Laboratory
Accreditation & PTs
Designation



CHEMICAL WARFARE AGENTS



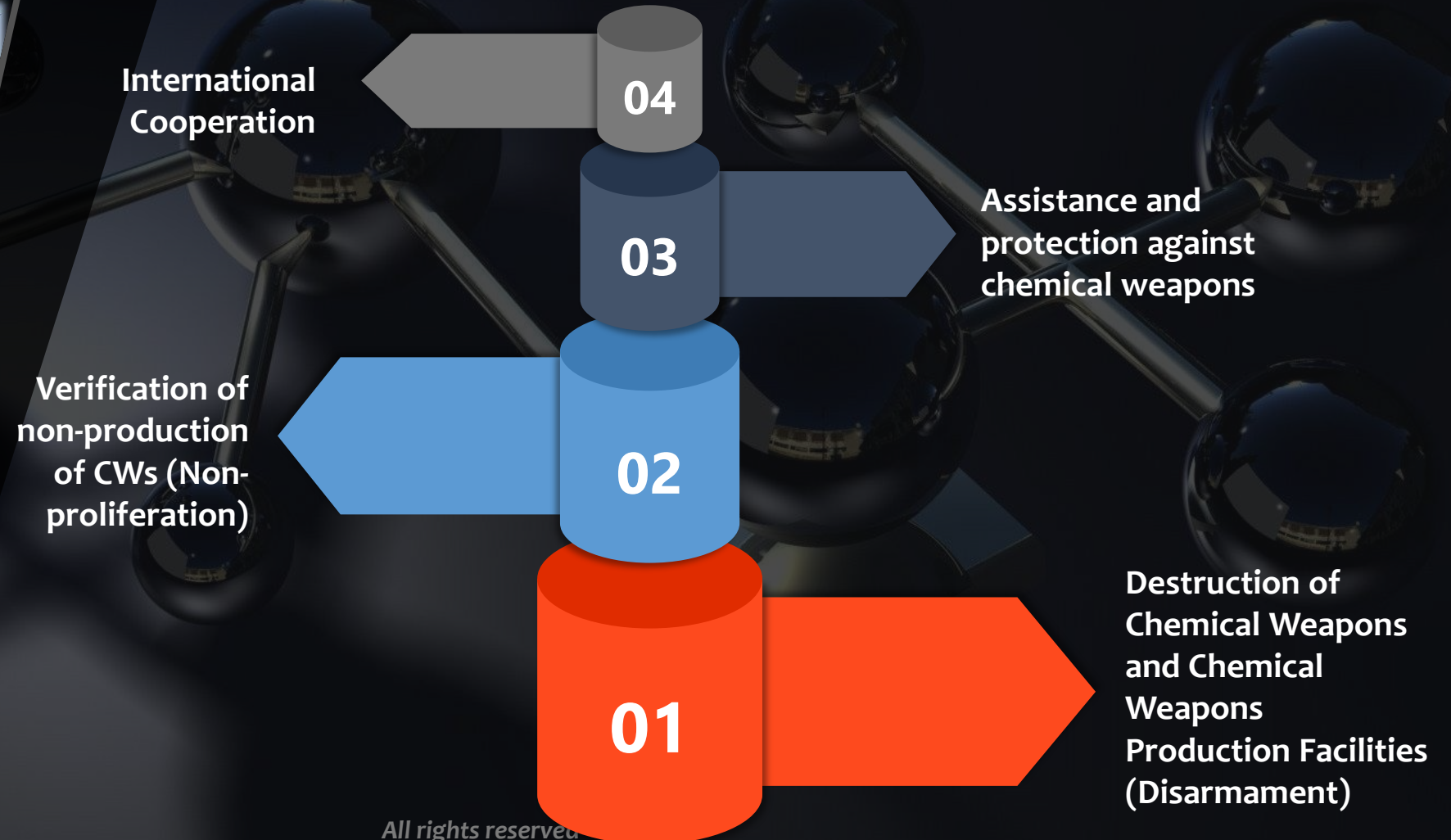
CHEMICAL WEAPONS CONVENTION (CWC)

PROHIBITS;

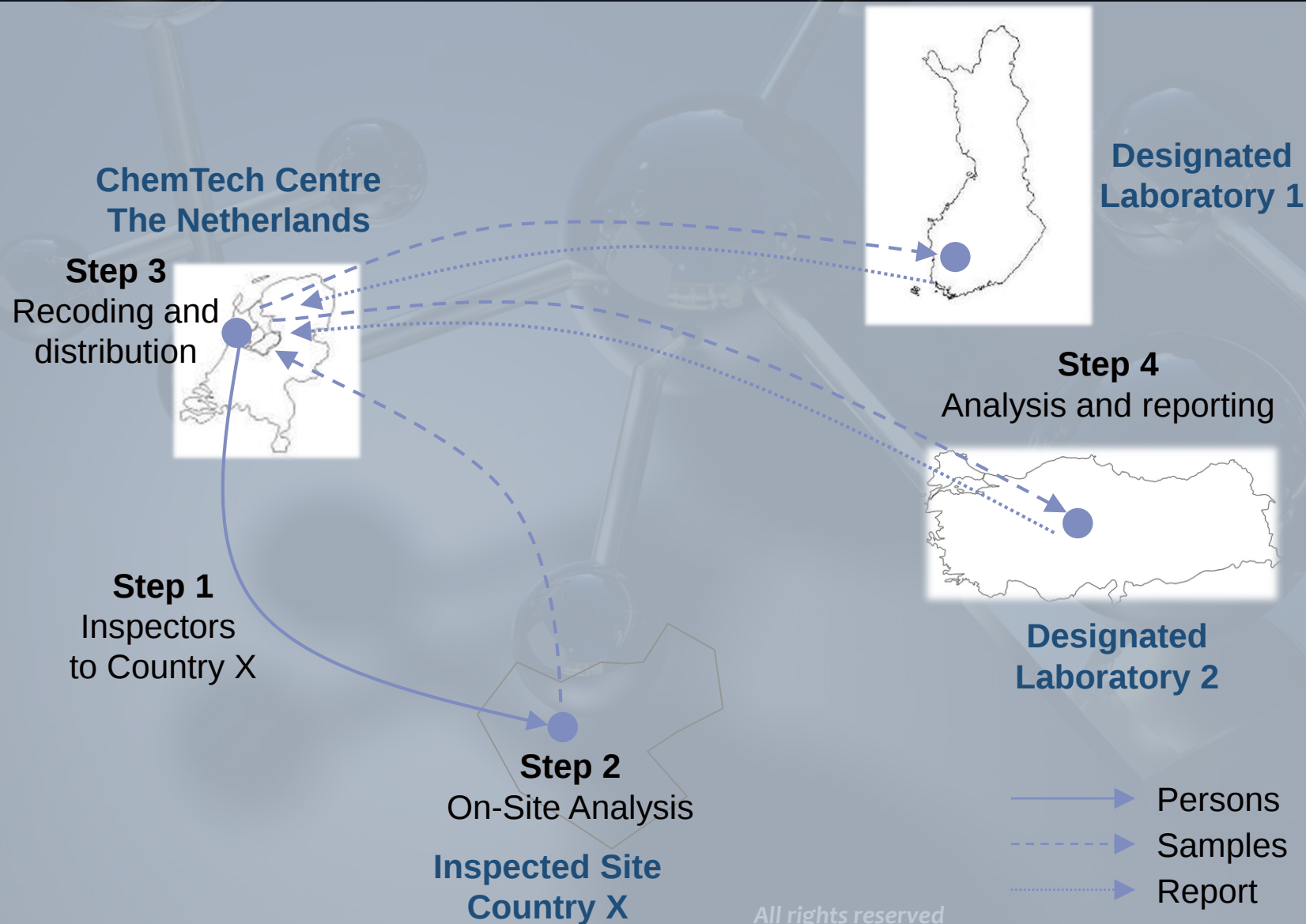
- ✓ Development and production
- ✓ Acquisition
- ✓ Stockpiling
- ✓ Retention
- ✓ Transfer or use.



Organisation for the Prohibition of Chemical Weapons (OPCW)

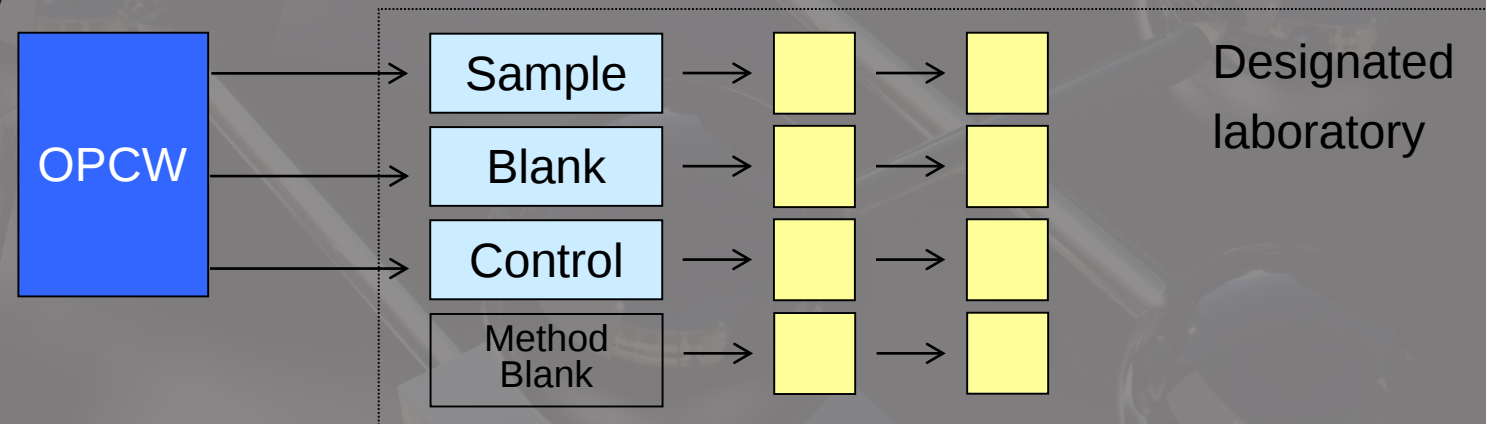


DESIGNATED LABORATORIES OF OPCW



DESIGNATED LABORATORIES OF OPCW

- **Primary objective:** Separate target chemicals to fractions, which can be analyzed with available technique
- **Secondary objective:** Remove background chemicals irrelevant to the scenario
- Samples and a method blank are analyzed similarly (quality control for sample preparation)



REQUIREMENTS FOR DESIGNATION

01 |

A designated laboratory must be able to maintain its accreditation

02 |

A designated laboratory or a laboratory seeking designation must participate a Proficiency Test once a year

03 |

Acceptable scoring from the last three test:

$3 \times A$

$2 \times A + 1 \times B$

04 |

This means that a designated laboratory can miss only one spiking chemical in three consecutive tests



ANALYSIS STRATEGY

Analysis of presence or absence of
banned chemicals consists of

Screening of
samples

Sample
Preparation

Chromatographic
and spectrometric
analyses

Reporting

Time frame: 15 days
from sample receipt to
the sending of the
final report

When are the laboratory results internationally recognised?

Different spectrometric methods are used together to produce reliable identification for all chemicals relevant to the scenario

01 GC-MS (EI)



02 GC-MS (CI)



03 LC-MS/MS

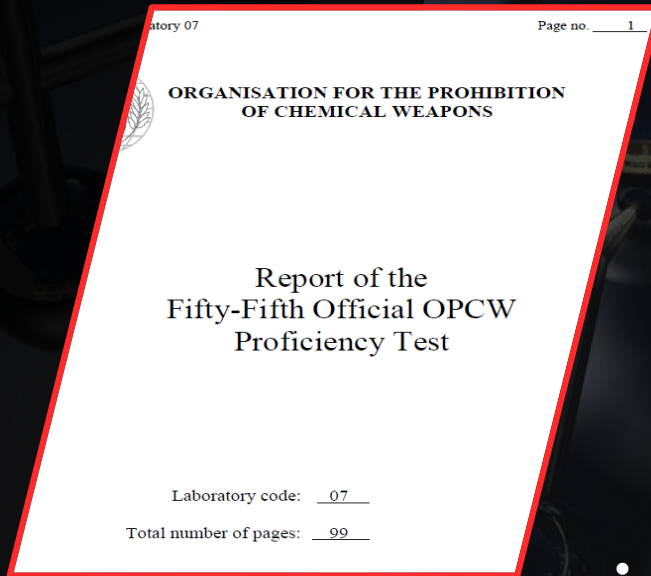


04 GC/LC- HRMS

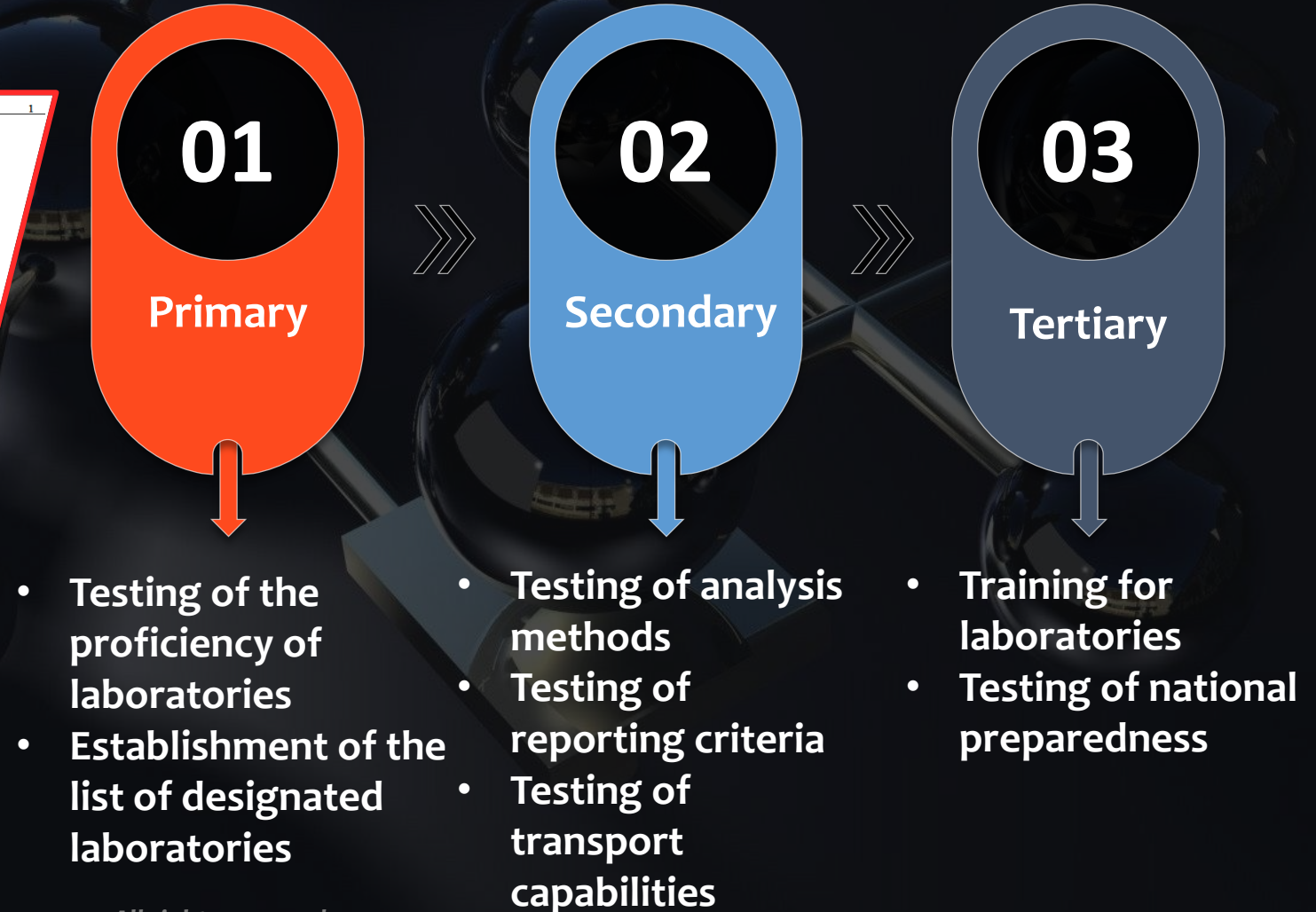




Purpose of the OPCW Proficiency Test



PROFICIENCY TESTS



PROFICIENCY TESTS



- Sample preparing laboratory sends each participant:
- 2 x (Sample + Matrix blank + Control)
e.g. Soil+blank+control,
Organic+blank+control

Sample: "Authentic" sample

Matrix blank: Matrix similar to sample; no spiking

Control: Spiked with control chemicals

PROFICIENCY TESTS

Scoring of the test

A

All spiking chemicals identified (with sufficient data)

C

More than 50% of the chemicals identified

B

All but one chemical accepted

D

Less than 50% of the chemicals identified

F

Failure of the test

- No accepted chemicals
- Reporting of **False positive** chemicals
- Reporting of **Irrelevant** chemicals
- Failure to submit a report
- Late submission of a report

All reported spiking chemicals must supported with sufficient data to be scorable chemicals

PROFICIENCY TESTS

Proficiency tests are...

A method for OPCW to test laboratories

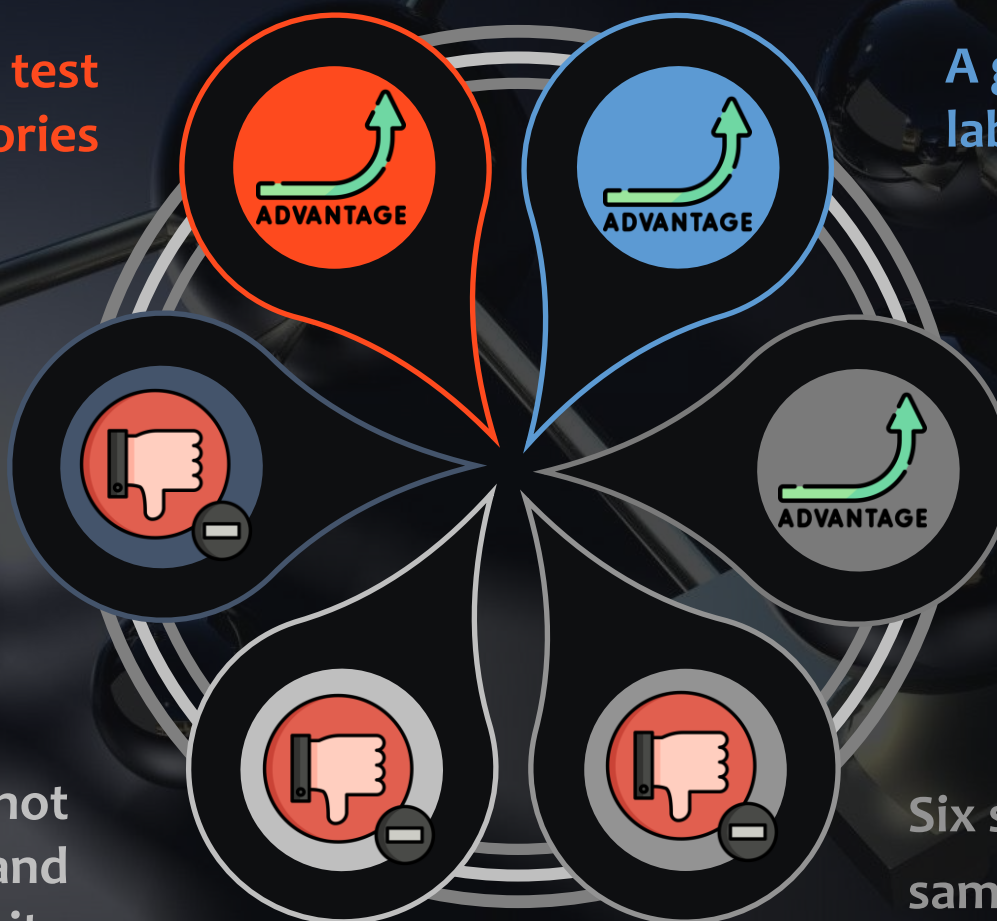
A good practise for laboratories

There is only 15 days for analysis and reporting

Proof of proficiency for laboratories seeking accreditation

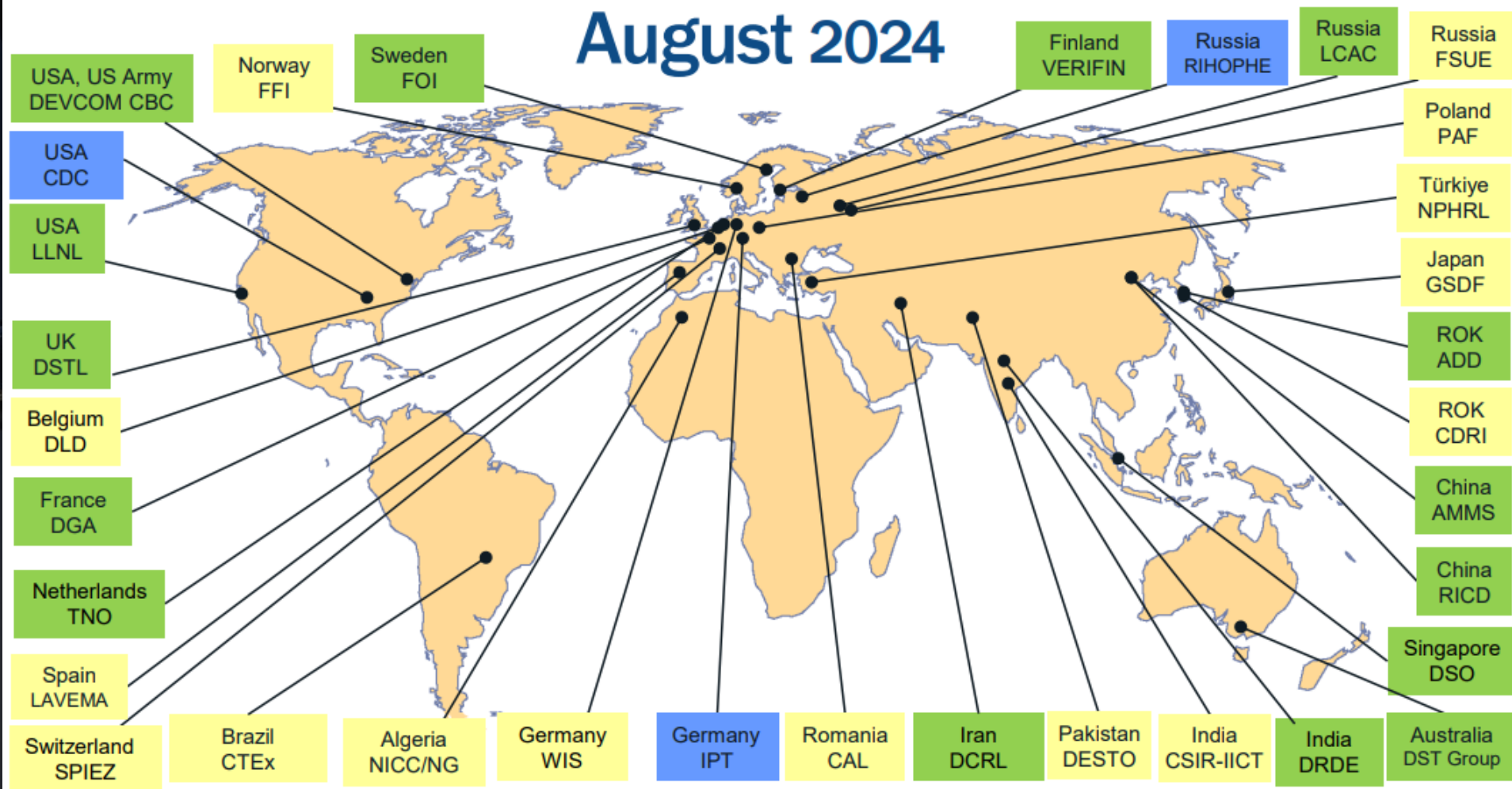
Often 1–2 chemicals are not found in databases and reporting criteria are quite detailed

Six samples are received and sample preparation is complex



OPCW Designated Laboratories

August 2024



30 Designated Laboratories in 25 countries for Environmental sample analysis

18 Designated Laboratories in 14 countries for Biomedical sample analysis



OPCW

For Biomedical & Environmental samples (# 15)

For Environmental samples only (# 15)

For Biomedical samples only (# 3)

Chemical Warfare Agents Diagnosis & Verification Laboratory



Turkey says evidence of sarin gas in Syria attack found

Turkey's Chemical Warfare Agents Diagnosis and Verification Laboratory confirms findings: Health Minister Akdag

18:59, 11 April 2017 Tuesday



SON DURUM MAHİR BEKİROĞLU ATAS - DOKTOR
KİMYASAL SİLAH TESPİTİ BURADA YAPILIYOR
CNN TÜRK TÜRKİYE'NİN İLK VE TEK OLAN LABORATUVARINA GİRDİ

13.63 LARİ SAVUNMA SANAYİ FONUNA KREDİ KARTLARINDAN KATKI PAYI ALINMASINA İLİŞKİN DÜZENLİ csmturk.com



Chemical Warfare Agents Diagnosis & Verification Laboratory



It is **the ONLY** laboratory conducting the diagnosis and verification of chemical warfare agents with **accreditation** according to 17025 standard in Türkiye.

Also, it is one of the OPCW designated laboratories.



We continue to provide service with our state-of-the-art device infrastructure, advanced trainings received in Türkiye and abroad, and our competent, well-equipped and experienced staff.

Chemical Warfare Agents Diagnosis & Verification Laboratory

Accreditation

2019

With flexible
scope

 **TURKISH ACCREDITATION AGENCY**

ACCREDITATION CERTIFICATE

As a Testing Laboratory

**T.C. SAĞLIK BAKANLIĞI, HALK SAĞLIĞI GENEL MÜDÜRLÜĞÜ, Halk Sağlığı Referans Laboratuvarları
Dairesi Başkanlığı, Ulusal Halk Sağlığı Referans Laboratuvarı**
Central Address: SIHHİYE PR.DR NUSRET FİŞEK NO:41 ÇANKAYA Ankara / Türkiye

is accredited in accordance with TS EN ISO/IEC 17025:2017 standard within the scope given in Annex following the assessment conducted by TURKAK.

Accreditation Number : AB-0949-T
Accreditation Date : 30.12.2015
Revision Date / Number : 11.03.2024 / 10

This certificate shall remain in force until 28.12.2027, subject to continuing compliance with the standard TS EN ISO/IEC 17025:2017, related regulations and requirements.

Gülden Banu Müderrisoğlu
Secretary General



Turkish Accreditation Agency (TURKAK) is a signatory to the European co-operation for Accreditation (EA) Multilateral Agreement (MLA) and International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Agreement (MRA) in the scope of ISO/IEC 17025.

This document has been signed by Gülden Banu Müderrisoğlu with a secure electronic signature in accordance with the electronic signature law numbered 5070. Use the QR code to verify the e-signed document.

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Chemical Warfare Agents Diagnosis & Verification Laboratory

Proficiency
Tests

2017-2024

Three **A**s in
last three
years.



PT-51

Date: 29.07.2022

Spiking Chemicals: 7

Reporting Chemicals: 7

Score: A



PT-53

Date: 18.05.2023

Spiking Chemicals: 7

Reporting Chemicals: 7

Score: A



PT-55

Date: 08.05.2024

Spiking Chemicals: 8

Reporting Chemicals: 8

Score: A

Chemical Warfare Agents Diagnosis & Verification Laboratory

Designation

2024

S/2312/2024



OPCW

Technical Secretariat

S/2312/2024
9 August 2024
ENGLISH only

NOTE BY THE DIRECTOR-GENERAL

STATUS OF LABORATORIES DESIGNATED FOR THE ANALYSIS OF AUTHENTIC ENVIRONMENTAL SAMPLES

OPCW DESIGNATED LABORATORIES

	Laboratory	State Party
23.	Verification Laboratory, Defence Medical and Environmental Research Institute, DSO National Laboratories	Singapore
24.	Laboratorio de Verificación de Armas Químicas (LAVEMA), INTA Campus La Marañosa	Spain
25.	FOI, Swedish Defence Research Agency	Sweden
26.	Spiez Laboratory, Swiss NBC Defence Establishment	Switzerland
27.	Chemical Warfare Agents Diagnosis and Verification Laboratory (NPHRL)	Türkiye
28.	Defence Science and Technology Laboratory, Porton Down	United Kingdom of Great Britain and Northern Ireland
29.	DEVCOM Chemical Biological Center, Forensic Analytical Laboratory	United States of America
30.	Lawrence Livermore National Laboratory	United States of America



OPCW

The Technical Secretariat of the
Organisation for the Prohibition of Chemical Weapons
hereby certifies

**Chemical Warfare Agents Diagnosis
and Verification Laboratory (NPHRL)**
Türkiye

as

OPCW Designated Laboratory
for the analysis of environmental
samples

2024–2025

pursuant to subparagraph 56 (b) of Part II of the Verification
Annex of the Chemical Weapons Convention and the relevant
decision of the Conference of the States Parties and the
Executive Council.



Fernando Arias
Director-General

Fernando Arias
Director-General
Organisation for the Prohibition
of Chemical Weapons (OPCW)

Organisation for the Prohibition of Chemical Weapons
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THANK YOU

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