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# CREATIF

Network of Testing Facilities for  
CBRNE detection equipment

An FP7-funded project, FP7/2007-2013 under grant agreement no. 217922



SEIBERSDORF  
LABORATORIES



**BAM**  
Bundesanstalt für  
Materialforschung  
und -prüfung

**COTECNA**



**TNO** innovation  
for life

# Project details



- Duration 30-month (01.02. 2009 – 30.07.2011)
- 7 partners
- Coordination action (100% funding direct costs)
- 830.000 Euro budget
- 50 Person Months funded
- Security project (some EU-restricted documents)

# CREATIF - Motivation



- Presence & capabilities of **Test Centers for CBRNE detectors**
- Availability of **Standards and Test Protocols**
- **Harmonization of Testing (Quality Assurance)**
- **comprehensive** testing of **CBRNE** systems
- **Information Transfer** between **Stakeholders**



# CREATIF – Objectives I



- **Database** on Test Facilities & capabilities
- Offer **Discussion platform**
  - **End-user support**
  - promote **best practise** of testing
  - **suggest** improved test protocols,
  - plan Round Robin Exercises
- coordinate **Comprehensive** (combined!) **Testing**



# CREATIF – Objectives II



- **Roadmap for Future Development of Testing**  
(including standardization & certification)
  - suggest **Minimum Requirements** of Testing Facilities
  - improve **Testing Procedures** to cover Human Factors and Operational Issues
    - ➔ *scenario-based testing*
- agree on **Certification Strategies** for Facilities and Devices





# Chemical and Biological detection devices

Expert networks for  
Harmonization of Testing



# Expert networks for harmonization of CBRNE-Agent detection device testing



## Deliverables

- D.2.x.1 Data base on chemical agent detection device test facilities.
- D.2.x.2 Workshop report incl. presentations on Chemical detection testing
- D.2.x.3 Road map for developing harmonized standards in the field of Chemical detector testing.
- D.2.x.4 Outline for joint testing of Chemical detectors

# 2.1.1 BC-detector test facilities



## *C-detection test sites:*

- *22 test facilities used by 15 organizations in 10 different countries were identified.*

## *B-detection test sites:*

- *18 test facilities used by 10 organizations in 7 different countries were identified.*

## 2.1.2 Conclusions from Stakeholder workshop, Brussels



- There was an agreement on the advantages of standards for test and evaluation of C-detectors
  - Specifications meeting applications
  - Universal detection requirements
  - Reduction in cost
- Start to develop methodology on military standards; CWA first, TIC later
- Need to agree on reference agents and interferent substances for testing
- Focus on laboratory testing first. Outdoor testing in a later stage

## 2.1.3 Definitions needed



- What substances should be detected by a C-detector?
  - EU CBRN Task Force tells that the selection should be based on a risk-based approach and use the term “chemical agents” rather than chemical weapons.
- Classes of C-detectors should be defined for different operational use and applications
  - Hand-held, portable, transportable, fixed
  - Warning, classification, monitoring, reconnaissance, confirmation and identification.

## 2.x.3 Existing standards



- Standardized testing and evaluation of B- and C-detectors is not performed by any of the organizations covered by Creatif
- In-house methods and protocols are in use

## 2.1.3 General standards



- General standards for statistical interpretation of analytical measurements (ISO 5725-1:1994 to ISO 5725-6:1994)
- General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:25)
- General requirements for measurement processes and measuring equipment (ISO 10012:2003)

## 2.x.3 Documents impacting on standards for testing BC-detectors



- CBWA Early Warning and Detection Triptych, NATO CBRN DIM SG
- Chemical and Biological Sensor Standard Study, DARPA, Microsystems Technology Office, Ed. 1 (2004), Ed. 2 (2010)
- Health-based chemical vapor concentration levels for future systems acquisition and development, USACHPPM Technical report, 64-FF-07Z2-07 (2008)

## 2.1.3 Methodology to obtain standards



- First develop test and methodology based on military standards
- Start with CWA. Add TIC and TIM later
- Use interlaboratory comparison testing to harmonize and develop common or mutual protocols
- Appoint and certify a group of test centers by round robin exercises

## 2.1.4 Outline of Round robin exercise



- Usually Round Robin exercises involve distribution of samples to laboratories, for them to determine which chemicals are present at what concentrations in the samples
- In this case a detector should be sent to the test centers. The task is to test the device against a choice of chemical agents, at desired environmental conditions and report performance metrics from the tests
- An impartial evaluation of the test results should be made to obtain the repeatability of tests by each test center and the deviation of results from different laboratories

## 2.x.4 Parameters to evaluate



- Agents detectable
- Detection limit for each agent
- Dynamic range
- Response time
- Overload level and recovery time
- Response of possible interferents (selectivity)
- Environmental conditions (Temperature/RH)
- False alarm rate

# CREATIF – Standardization needs



- R: many standards (ANSI, IEC, IAEA) available
  - Don't reinvent the wheel → transfer of existing standards to European (CEN/CENELEC) in progress
- C/B/E: European Round Robin exercises
- C/B: Standardization to obtain repeatability and minimize deviations in test results
- B: Start work on harmonization of protocols for testing (aerosol generation, simulant agents)
- Develop complementary testing standards
  - Human factors, usability, operational issues



# CREATIF Contact



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