



# Scientific International Conference on CBRNe

## SICC Series – CBRNe Conference 2026

### Fourth Edition

28 September – 3 October 2026  
Rome (Italy), Istituto Superiore Antincendi (ISA)

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# 1. SICC SERIES – CBRNe CONFERENCE 2026

The SICC Series – CBRNe Conference 2026 builds upon the success of its previous editions to strengthen the scientific, institutional, and operational dialogue on non-conventional safety and security.

Organized by the University of Rome Tor Vergata in cooperation with national and international partners the event serves as a unique meeting point for universities, research centres, armed forces, civil protection agencies, first responders, policymakers, and industry leaders engaged in the CBRNe domain.

The 2026 edition will highlight integrated risk management and resilience, bridging topics such as emergency and crisis coordination, detection and decontamination technologies, medical and health management, AI-enabled decision support, cybersecurity, education and training, forensic investigation, and climate-related emerging threats.

Through plenary talks, technical sessions, workshops, and networking opportunities, the conference aims to foster innovation, share best practices, and promote international cooperation in protecting people, critical infrastructures, and the environment from CBRNe and hybrid threats in an ever-changing world.

The fourth edition of the SICC Series – CBRNe Conference will take place from 28 September to 3 October 2026 at the National Fire Academy – *Istituto Superiore Antincendi* (ISA) in Rome (Italy).

The conference will host 3 high-level Plenary Sessions, 12 Technical Sessions, 2 Poster Sessions, an IMLEX – Integrated Multi-Layer Exercise, the CBRNe School and the Industrial Exhibition and Live Showcases.

In the first edition (2017) we hosted 620 participants and in the second edition (2020 – held on a virtual reality platform) we had 596 participants coming from all over the world, in the third edition 2023 we had 690 participants coming from all over the world

The conference is organized by the University of Rome Tor Vergata, Italian Fire Brigades and the Abu Dhabi Civil Defence Authority in the framework of the International Master Courses in Protection against CBRNe Events, in cooperation with the following international entities:

- NATO – North Atlantic Treaty Organization (International)
- IAEA – International Atomic Energy Agency (International)
- OPCW – Organisation for the Prohibition of Chemical Weapons (International)
- Presidency of the Council of Ministers (Italy)
- Ministry of the Interior (Italy)
- Ministry of Defence (Italy)
- UNICRI – United Nations Interregional Crime and Justice Research Institute (International)
- ISIN – National Inspectorate for Nuclear Safety and Radiation Protection (Italy)
- CEPOL – European Union Agency for Law Enforcement Training (European Union)
- JCBRN Defence Centre of Excellence (Czech Republic)
- DLR – German Aerospace Center (Germany)
- Abu Dhabi Civil Defence Authority – ADCDA (United Arab Emirates)
- INTERPOL – International Criminal Police Organization (International)
- Ministry of Interior, Kingdom of Bahrain (Bahrain)
- Ministry of Foreign Affairs and International Cooperation (Italy)
- ENEA – Italian National Agency for New Technologies, Energy and Sustainable Economic Development (Italy)
- Hirosaki University (Japan)
- Yale School of Public Health (United States of America)
- The University of Adelaide (Australia)
- Policlinico Tor Vergata (Italy)
- University of Pisa (Italy)
- University of Florence (Italy)
- Italian Defence Industries Agency – AID (Italy)
- Defence CBRN Centre (Netherlands)
- EOD Centre (Netherlands)
- Vinča Institute of Nuclear Sciences, University of Belgrade (Serbia)
- Seibersdorf Laboratories (Austria)
- SOGIN (Italy)
- Celio Military Hospital, Rome (Italy)
- ASST Papa Giovanni XXIII – Ospedale di Bergamo (Italy)
- IRCCS Lazzaro Spallanzani (Italy)
- ASL Roma 6 (Italy)
- ICCSS – International Centre for Chemical Safety and Security (Poland)
- F-REI – Fukushima Institute for Research, Education and Innovation (Japan)
- Order of Chemists and Physicists of Rome (Italy)

- Portuguese Army CBRN Defence Unit (Portugal)
- Istituto Superiore di Sanità – Italian National Institute of Health (Italy)
- University of Fukui (Japan)
- Federal University of Sergipe (Brazil)
- University of Rome Tor Vergata (Italy)
- HUN-REN Centre for Energy Research (Hungary)
- EPLO – European Public Law Organization / Institute for Privacy Law, Data Protection and Technology (Greece)
- Princess Sumaya University for Technology (Jordan)
- American University of Beirut (Lebanon)
- University of Public Service (Hungary)
- International Security and Emergency Management Institute – ISEM Institute (Slovakia)
- UNITAR – United Nations Institute for Training and Research (International)
- National Crisis Center (Bulgaria)
- UCLouvain – Université catholique de Louvain (Belgium)
- University of Civil Protection (Bulgaria)
- National Civil Protection / Fire Safety Training Institution (Bulgaria)
- ICCS – Institute of Communication and Computer Systems (Greece)
- Università Cattolica del Sacro Cuore (Italy)
- FOI – Swedish Defence Research Agency (Sweden)
- Adelfas – Association for Deployment, Education, Life Saving and Territory (Spain)
- Campus Vesta (Italy)
- War Studies University – CBRN Defence Training Centre (Poland)
- Military Police / CBRN-related partner (United Kingdom)
- Middle East Technical University – METU (Türkiye)
- NATO Istanbul University / CBRN-related partner (Türkiye)
- City of Dortmund Fire Department (Germany)
- KeMEA – Center for Security Studies (Greece)
- REC Caucasus – Regional Environmental Centre for the Caucasus (Georgia)
- CNRS – French National Centre for Scientific Research (France)
- University of Alcalá (Spain)
- Fraunhofer Society (Germany)
- Portuguese Criminal Police / Polícia Judiciária (Portugal)
- University of Bari Aldo Moro (Italy)
- VTT Technical Research Centre of Finland (Finland)
- Spanish National Police (Spain)
- INTCF – National Institute of Toxicology and Forensic Sciences (Spain)
- DIN – German Institute for Standardization (Germany)

## 2. KEY DATES

|                                                                                            |                                                          |
|--------------------------------------------------------------------------------------------|----------------------------------------------------------|
| <i>Abstract submission<br/>OPEN</i>                                                        | <i>10 February 2026</i>                                  |
| <i>Notification to the authors<br/>(Abstract Acceptance)</i>                               | <i>1-2 weeks from submission</i>                         |
| Registration<br>OPEN                                                                       | 5 March 2026                                             |
| Abstract submission<br>DEADLINE                                                            | 3 August 2026<br>11:59 p.m. - CET<br>(postponed)         |
| Early Bird Registration<br>Deadline                                                        | 25 August 2026                                           |
| Registration has closed due to the maximum number<br>of participants that has been reached | 10 September 2026                                        |
| <b>Conference Dates</b>                                                                    | <b>28 September - 03 October 2026</b>                    |
| Full paper submission<br>DEADLINE                                                          | 15 December 2026                                         |
| Notification to authors<br>(Full Paper Acceptance)                                         | November 2026-January 2026                               |
| Full Paper<br>Published on Scientific Journals                                             | November 2026 - July 2027                                |
| Full Paper Published<br>indexed on SCOPUS and ISI WEB of SCIENCE                           | 3-4 weeks from the publication<br>on Scientific Journals |

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## 6. SCIENTIFIC AND TECHNICAL TOPICS

### A. CBRNE FUNDAMENTALS AND RISK ANALYSIS

- Analysis and Evaluation of CBRNe Threats
- CBRNe Awareness and Preparedness
- CBRNe Events: Prediction and Management
- CBRNe Hazard Simulation
- CBRNe Risk Mitigation
- CBRNe Risk Scenarios
- CBRNe Scene vs Crime Scene
- Critical Infrastructure Risks and Control
- Diffusion and Dispersion Models
- Evolution of CBRNe Threats
- Non-Conventional Threats (NCT)
- Risk Assessment and Risk Awareness
- Safety vs Security
- Technical Challenges on Chemical and CWA Agents

### B. CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR AND EXPLOSIVE (CBRNe) AGENTS

- Biological Agents (BAs) and Biological Warfare Agents (BWAs)
- Biological Emerging and Re-emerging Threats and Epidemiology
- Chemical Agents (CAs) and Chemical Warfare Agents (CWAs)
- Explosives and Improvised Explosive Devices (IEDs)
- Dirty Bombs and Radiological Dispersal Devices
- Toxins and Microbiological Pathogens
- Radiological and Nuclear Risks and Accidents
- Environmental Contamination and Decontamination

### C. DETECTION, PROTECTION AND DECONTAMINATION

- Detection of CBRNe Agents
- New Technologies for Biological Agents Detection
- Innovative Materials for Medical and PPE Applications
- Personal and Collective Protective Equipment (PPE/CPE): Materials, Technologies and Systems
- Biological Agents Decontamination
- Chemical Agents Decontamination
- R/N Protection and Decontamination
- Engineering Applications for Ce and CWA Decontamination, Protection and Risk Reduction

#### **D. MODELLING, SIMULATION AND DECISION SUPPORT**

- Modelling and Simulation in CBRNe Risk Management
- Decision Support Software and Systems (DSS)
- R/N Modelling and Simulation
- Predictive Analytics and Data-Driven Modelling
- Diffusion and Dispersion Models
- Digital Twin and Virtual Environments for Emergency Scenarios
- Risk Modelling and AI-enabled Decision-Support Tools

#### **E. ARTIFICIAL INTELLIGENCE, DATA AND CYBER DIMENSION**

- Artificial Intelligence Towards Safety & Security
- Machine Learning and Deep Learning
- Big Data and Data Mining Applied to CBRNe Safety and Security
- Internet of Things (IoT) and Smart Systems
- Cybersecurity, Cyber-warfare and Cyber-terrorism
- Privacy Issues in AI, IoT and Smart Systems
- International Legal Frameworks Governing Cyber-Related Issues
- ICT Vulnerabilities and Computational Aspects
- Intelligent Systems in Risk Management

#### **F. EDUCATION, TRAINING AND AWARENESS**

- Active Learning and Serious Games Applied to CBRNe
- Training and Simulation Exercises
- CBRNe Technologies for Teaching and Education
- Education Methodologies
- Raising Awareness and Public Risk Perception
- Inclusive Resilience and Engaging Societies
- Emergency Psychology and Behavioural Response

#### **G. EMERGENCY MANAGEMENT AND RESPONSE**

- First Response in Case of CBRNe Events
- Command, Control and Communication (C3) in CBRNe Emergencies
- Emergency Communication and Information
- Emergency Management and Plans
- Crisis and Disaster Management
- Disaster Risk Reduction (DRR)
- Inclusive Disaster Risk Management
- Mass Disasters and Triage
- Emergency Preparedness and Response (R/N, Chemical, Biological)
- Civil Protection, Civil Defence and Dual-Use Technologies

- Drones and Unmanned Vehicles Applications

## **H. HEALTH, MEDICAL AND BIOSAFETY**

- Biosafety and Biosecurity
- Medical Countermeasures: Vaccines, Antimicrobials, Antivirals and Diagnostics
- Medical Management in CBRNe Safety and Security
- Epidemiological Models and Epidemic Intelligence
- Food Safety, Food Security and “Food War”
- Public Health Emergencies Management
- Radiation Protection and Radiological Safety
- Exposome and Long-term Health Effects

## **I. FORENSICS, LAW AND INVESTIGATION**

- Investigation, Evidence Collection and Chain of Custody
- Forensic Microbiology and Bioforensics
- Onus Probadi in Courts and International Disputes
- International Legal Frameworks Governing CBRNe: Gaps and Opportunities
- Non-Proliferation and Disarmament Regimes
- DVI (Disaster Victim Identification) Units

## **J. INNOVATION, ENGINEERING AND MATERIAL SCIENCE**

- Nanotechnologies and Nanomaterials for Safety & Security
- Experimental and Applied Physics for CBRNe Protection and Risk Reduction
- Improved Nuclear Safety and Security
- Innovative Sensors, Robotics and Autonomous Systems
- Extended Reality, Virtual Reality, Augmented and Mixed Reality
- Space Applications and Space Weather Impacts
- Digital Transformation and Dual-Use Innovation

## **K. GOVERNANCE, COOPERATION AND POLICY**

- Business Continuity and Critical Infrastructure Protection
- Adaptation Strategies to Climate Change
- International Cooperation and Response
- Global Partnerships for Safety and Security
- Inclusive Resilience and Vulnerable Citizens
- Non-Proliferation, Disarmament and Arms Control
- Economic Analysis of CBRNe and Cyber Threats
- Conflict and Hybrid Threats

## **L. LABORATORIES, STANDARDS AND ACCREDITATION**

- Accredited and Designated Laboratories
- Diagnostic and Surveillance Networks
- Quality Assurance and Standardization
- Laboratory Safety and Reference Systems
- Decommissioning and Waste Management

## **M. CROSS-CUTTING & EMERGING THEMES**

- Dual-Use Technologies and Ethics of Innovation
- Space Safety, Radiation and High-Altitude Exposure
- Exposome, Climate and Environmental Health
- Artificial Intelligence and the EU AI Act
- Digital Twin Models for CBRNe Preparedness
- Citizen Science and Participatory Risk Management
- Societal Resilience in Complex Emergencies

## SCHEMATIC PROGRAM

Day 0 – Sunday - 27<sup>th</sup> September 2026 – National Fire Academy (NFA)

| SICC Series CBRNe Conference 2026 – 27 September 2026 |                                                         |
|-------------------------------------------------------|---------------------------------------------------------|
| TIME                                                  | ACTIVITIES - NATIONAL FIRE ACADEMY                      |
| 11:00 a.m. – 3:00 p.m.                                | Industrial Exhibition Preparation                       |
| 3:00 p.m. – 7:00 p.m.                                 | <b>Registration</b> / Industrial Exhibition Preparation |

Day 1 – Monday - 28<sup>th</sup> September 2026 – National Fire Academy (NFA)

| SICC Series CBRNe Conference 2026 – 28 September 2026 |                                                                                                                                                                                                                    |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TIME                                                  | ACTIVITIES - NATIONAL FIRE ACADEMY                                                                                                                                                                                 |
| 7:30 a.m. – 8:45 a.m.                                 | Registration                                                                                                                                                                                                       |
| 08:45 a.m. – 10:00 a.m.                               | Registration, Welcome Coffee & Industrial Exhibition                                                                                                                                                               |
|                                                       | <b>PLENARY SESSION 1</b><br><i>Room "Giorgio Mazzini" - Aula magna</i><br><b>Hybrid Warfare and Global Instability: New Frontiers of Strategic Conflict and Societal Resilience</b>                                |
| 10:00 a.m. – 10:30 a.m.                               | Institutional Welcome & Greetings from Authorities                                                                                                                                                                 |
| 10:30 a.m. – 11:00 a.m.                               | (P.S.1.1) <b>Lt. Gen. Giovanni Maria IANNUCCI</b><br>KEYNOTE SPEAKER<br><i>"Hybrid Warfare and Global Instability: The Iranian Model Tehran Between Peace, Crisis, and Conflict"</i>                               |
| 11:00 a.m. – 11:20 a.m.                               | (P.S.1.2) <b>Maj. Gen. Enrico PEDERZOLLI</b><br><i>"The Italian Intel Center and the Hybrid Warfar"</i>                                                                                                            |
| 11:20 a.m. – 11:40 a.m.                               | (P.S.1.3) <b>Maj. Gen. Dr. Shaikh Hamad bin Mohammed AL KHALIFA</b><br><i>"National Crisis and Emergency Response in the Kingdom of Bahrain"</i>                                                                   |
| 11:40 a.m. – 12:00 p.m.                               | (P.S.1.4) <b>Col Dr. Ibrahim ALMARZOOQI</b><br><i>"The Invisible Hazard: Psychological Impacts of CBRN Incidents on Firefighters and First Responders. A model from Abu Dhabi Civil Defence Authority (ADCDA)"</i> |

|                         |                                                                                                                                                                                                                                                         |                                    |                                  |                                                                                                        |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------|
| 12:00 p.m. – 12:20 p.m. | (P.S.1.5) Dr. <b>Antonio ANECCHINI</b><br><i>"CBRNe emergency planning between Civil Defence and Civil Protection: the role of the Department of Firefighters, Public Rescue and Civil Defence and of the Italian National Fire and Rescue Service"</i> |                                    |                                  |                                                                                                        |
| 12:20 p.m. – 12:40 p.m. | (P.S.1.6) <b>Col. Mariusz MŁYNARCZYK</b><br><i>"CBRN Defence in Modern Warfare"</i>                                                                                                                                                                     |                                    |                                  |                                                                                                        |
| 12:40 p.m. – 12:55 p.m. | (P.S.1.7) <b>Dr. Massimo MARIZI</b><br><i>"Building national CBRN resilience through industrial aggregation: A Model for Technology Transfer, Dual-Use Convergence, and SME Integration"</i>                                                            |                                    |                                  |                                                                                                        |
| 12:40 p.m. – 1:00 p.m.  | (P.S.1.8) <b>Dr. Alba IANNOTTI and Dr. Colomba RUSSO</b><br><i>"CBRNe Education, Training and Research: Mission and Vision of the University of Rome Tor Vergata"</i>                                                                                   |                                    |                                  |                                                                                                        |
|                         | Chairperson - <b>Prof. Andrea MALIZIA</b>                                                                                                                                                                                                               |                                    |                                  |                                                                                                        |
| 1:00 p.m. – 2:15 p.m.   | Lunch Break / Industrial Exhibition                                                                                                                                                                                                                     |                                    |                                  | CBRNe Mobile Laboratories<br>Italian Fire Fighters<br>&<br>Italian Military Red Cross<br>Decon Station |
| 2:15 p.m. – 2:45 p.m.   | Industrial Exhibition / <b>Tech. &amp; Innovation Showcase: SERB</b>                                                                                                                                                                                    |                                    |                                  |                                                                                                        |
| 2:45 p.m. – 3:00 p.m.   | Industrial Exhibition                                                                                                                                                                                                                                   |                                    |                                  |                                                                                                        |
|                         | <b>Room 22 "Tosi Beleffi"</b>                                                                                                                                                                                                                           | <b>Room 19 "Paris"</b>             | <b>Room 20 "Berlin"</b>          | <b>Room 21 "London"</b>                                                                                |
| 3:00 p.m. – 3:15 p.m.   | Technical Session 1<br>(T.S.1.1)                                                                                                                                                                                                                        | Technical Session 10<br>(T.S.10.1) | Technical Session 7<br>(T.S.7.1) | Technical Session 4<br>(T.S.4.1)                                                                       |
| 3:15 p.m. – 3:30 p.m.   | Technical Session 1<br>(T.S.1.2)                                                                                                                                                                                                                        | Technical Session 10<br>(T.S.10.2) | Technical Session 7<br>(T.S.7.2) | Technical Session 4<br>(T.S.4.2)                                                                       |
| 3:30 p.m. – 3:45 p.m.   | Technical Session 1<br>(T.S.1.3)                                                                                                                                                                                                                        | Technical Session 10<br>(T.S.10.3) | Technical Session 7<br>(T.S.7.3) | Technical Session 4<br>(T.S.4.3)                                                                       |
| 3:45 p.m. – 4:00 p.m.   | Technical Session 1<br>(T.S.1.4)                                                                                                                                                                                                                        | Technical Session 10<br>(T.S.10.4) | Technical Session 7<br>(T.S.7.4) | Technical Session 4<br>(T.S.4.4)                                                                       |
| 4:00 p.m. – 4:15 p.m.   | Technical Session 1<br>(T.S.1.5)                                                                                                                                                                                                                        | Technical Session 10<br>(T.S.10.5) | Technical Session 7<br>(T.S.7.5) | Technical Session 4<br>(T.S.4.5)                                                                       |

|                               |                                      |                                     |                                   |                                   |
|-------------------------------|--------------------------------------|-------------------------------------|-----------------------------------|-----------------------------------|
| <b>4:15 p.m. – 4:30 p.m.</b>  | Technical Session 1<br>(T.S.1.6)     | Technical Session 10<br>(T.S.10.6)  | Technical Session 7<br>(T.S.7.6)  | Technical Session 4<br>(T.S.4.6)  |
| <b>4:30 p.m. – 4:45 p.m.</b>  | Technical Session 1<br>(T.S.1.7)     | Technical Session 10<br>(T.S.10.7)  | Technical Session 7<br>(T.S.7.7)  | Technical Session 4<br>(T.S.4.7)  |
| <b>4:45 p.m. – 5:15 p.m.</b>  | Coffee Break / Industrial Exhibition |                                     |                                   |                                   |
| <b>5:15 p.m. – 5:30 p.m.</b>  | Technical Session 1<br>(T.S.1.8)     | Technical Session 10<br>(T.S.10.8)  | Technical Session 7<br>(T.S.7.8)  | Technical Session 4<br>(T.S.4.8)  |
| <b>5:30 p.m. – 5:45 p.m.</b>  | Technical Session 1<br>(T.S.1.9)     | Technical Session 10<br>(T.S.10.9)  | Technical Session 7<br>(T.S.7.9)  | Technical Session 4<br>(T.S.4.9)  |
| <b>5:45 p.m. – 6:00 p.m.</b>  | Technical Session 1<br>(T.S.1.10)    | Technical Session 10<br>(T.S.10.10) | Technical Session 7<br>(T.S.7.10) | Technical Session 4<br>(T.S.4.10) |
| <b>6:00 p.m. – 6:15 p.m.</b>  | Technical Session 1<br>(T.S.1.11)    | Technical Session 10<br>(T.S.10.11) | Technical Session 7<br>(T.S.7.11) | Technical Session 4<br>(T.S.4.11) |
| <b>6:15 p.m. – 6:30 p.m.</b>  | Technical Session 1<br>(T.S.1.12)    | Technical Session 10<br>(T.S.10.12) | Technical Session 7<br>(T.S.7.12) | Technical Session 4<br>(T.S.4.12) |
| <b>6:30 p.m. – 7:00 p.m.</b>  | Break                                |                                     |                                   |                                   |
| <b>7:00 p.m. – 08.00 p.m.</b> | Welcome Cocktail & Music             |                                     |                                   |                                   |

Day 2 – Tuesday - 29<sup>th</sup> September 2026 – National Fire Academy (NFA)

| SICC Series CBRNe Conference 2026 – 29 September 2026 |                                      |                                     |                                   |                                  |
|-------------------------------------------------------|--------------------------------------|-------------------------------------|-----------------------------------|----------------------------------|
| TIME                                                  | ACTIVITIES - NATIONAL FIRE ACADEMY   |                                     |                                   |                                  |
| 8:00 a.m. – 9:00 a.m.                                 | Registration Desk open               |                                     |                                   |                                  |
|                                                       | <i>Room 22 "Tosi Belefji"</i>        | <i>Room 19 "Paris"</i>              | <i>Room 20 "Berlin"</i>           | <i>Room 21 "London"</i>          |
| 9:00 a.m. – 9:15 a.m.                                 | Technical Session 1<br>(T.S.1.13)    | Technical Session 10<br>(T.S.10.13) | Technical Session 7<br>(T.S.7.13) | Technical Session 5<br>(T.S.5.1) |
| 9:15 a.m. – 9:30 a.m.                                 | Technical Session 1<br>(T.S.1.14)    | Technical Session 10<br>(T.S.10.14) | Technical Session 7<br>(T.S.7.14) | Technical Session 5<br>(T.S.5.2) |
| 9:30 a.m. – 9:45 a.m.                                 | Technical Session 1<br>(T.S.1.15)    | Technical Session 10<br>(T.S.10.15) | Technical Session 7<br>(T.S.7.15) | Technical Session 4<br>(T.S.5.3) |
| 9:45 a.m. – 10:00 a.m.                                | Technical Session 1<br>(T.S.1.16)    | Technical Session 10<br>(T.S.10.16) | Technical Session 7<br>(T.S.7.16) | Technical Session 5<br>(T.S.5.4) |
| 10:00 a.m. – 10:15 a.m.                               | Technical Session 1<br>(T.S.1.17)    | Technical Session 10<br>(T.S.10.17) | Technical Session 7<br>(T.S.7.17) | Technical Session 5<br>(T.S.5.5) |
| 10:15 a.m. – 10:30 a.m.                               | Technical Session 1<br>(T.S.1.18)    | Technical Session 10<br>(T.S.10.18) | Technical Session 7<br>(T.S.7.18) | Technical Session 5<br>(T.S.5.6) |
| 10:30 a.m. – 10:45 a.m.                               | Technical Session 1<br>(T.S.1.19)    | Technical Session 10<br>(T.S.10.19) | Technical Session 7<br>(T.S.7.19) | Technical Session 5<br>(T.S.5.7) |
| 10:45 a.m. – 11:15 a.m.                               | Coffee Break / Industrial Exhibition |                                     |                                   |                                  |
| 11:15 a.m. – 11:30 a.m.                               | Technical Session 1<br>(T.S.1.20)    | Technical Session 10<br>(T.S.10.20) | Technical Session 7<br>(T.S.7.20) | Technical Session 5<br>(T.S.5.8) |
| 11:30 a.m. – 11:45 a.m.                               | Technical Session 1<br>(T.S.1.21)    | Technical Session 10<br>(T.S.10.21) | Technical Session 7<br>(T.S.7.21) | Technical Session 4<br>(T.S.5.9) |

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|-------------------------|---------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------|
| 11:45 a.m. – 12:00 p.m. | Technical Session 1<br>(T.S.1.22)                                                                       | Technical Session 10<br>(T.S.10.22)  |                                    | Technical Session 5<br>(T.S.5.10)                                                                      |
| 12:00 p.m. – 12:15 p.m. | Technical Session 1<br>(T.S.1.23)                                                                       | Technical Session 10<br>(T.S.10.23)  |                                    | Technical Session 5<br>(T.S.5.11)                                                                      |
| 12:15 p.m. – 12:30 p.m. | Technical Session 1<br>(T.S.1.24)                                                                       | Technical Session 10<br>(T.S.10.24)  |                                    | Technical Session 5<br>(T.S.5.12)                                                                      |
| 12:30 p.m. – 12:45 p.m. | Technical Session 1<br>(T.S.1.25)                                                                       |                                      |                                    | Technical Session 5<br>(T.S.5.13)                                                                      |
| 12:45 p.m. – 1:00 p.m.  | Technical Session 1<br>(T.S.1.26)                                                                       |                                      |                                    | Technical Session 5<br>(T.S.5.14)                                                                      |
| 1:40 p.m. – 1:45 p.m.   | Lunch Break / Industrial Exhibition                                                                     |                                      |                                    | CBRNe Mobile<br>Laboratories Italian<br>Fire Fighters &<br>Italian Military Red Cross<br>Decon Station |
| 1:45 p.m. – 3:15 p.m.   | Lunch break/ <b>Poster Session 1</b> / Industrial Exhibition                                            |                                      |                                    |                                                                                                        |
| 3:15 p.m. – 3:45 p.m.   | <b>Poster Session 1</b> / Industrial Exhibition / Tech. & Innovation Showcase:<br><b>LARIMART - DPI</b> |                                      |                                    |                                                                                                        |
|                         | Room 22 "Tosi Beleffi"                                                                                  | Room 19 "Paris"                      | Room 20 "Berlin"                   | Room 21 "London"                                                                                       |
| 3:45 p.m. – 4:00 p.m.   | Welcome Addresses<br>CBRNe School                                                                       | Open Meeting Space                   | Technical Session 12<br>(T.S.12.1) | Technical Session 1<br>(T.S.1.27)                                                                      |
| 4:00 p.m. – 4:15 p.m.   | SERB                                                                                                    |                                      | Technical Session 12<br>(T.S.12.2) | Technical Session 1<br>(T.S.1.28)                                                                      |
| 4:15 p.m. – 4:30 p.m.   | SERB                                                                                                    |                                      | Technical Session 12<br>(T.S.12.3) | Technical Session 1<br>(T.S.1.29)                                                                      |
| 4:30 p.m. – 4:45 p.m.   | LARIMART                                                                                                |                                      | Technical Session 12<br>(T.S.12.4) | Technical Session 1<br>(T.S.1.30)                                                                      |
| 4:45 p.m. – 5:00 p.m.   | LARIMART                                                                                                |                                      | Technical Session 12<br>(T.S.12.5) |                                                                                                        |
| 5:00 p.m. – 5:15 p.m.   | Coffee Break / Industrial<br>Exhibition                                                                 | Coffee Break / Industrial Exhibition |                                    |                                                                                                        |

|                       |              |                    |                                    |                    |
|-----------------------|--------------|--------------------|------------------------------------|--------------------|
| 5:15 p.m. – 5:30 p.m. | ELSE NUCLEAR | Open Meeting Space | Technical Session 12<br>(T.S.12.6) | Open Meeting Space |
| 5:30 p.m. – 5:45 p.m. | ELSE NUCLEAR |                    |                                    |                    |
| 5:45 p.m. – 6:00 p.m. | CAEN         |                    |                                    |                    |
| 6:00 p.m. – 6:15 p.m. | CAEN         |                    |                                    |                    |
| 6:15 p.m. – 6:30 p.m. | ANTON PAAR   |                    |                                    |                    |
| 6:30 p.m. – 6:45 p.m. | ANTON PAAR   |                    |                                    |                    |
| 6:45 p.m. – 7:00 p.m. | BMD          |                    |                                    |                    |
| 7:00 p.m. – 7:15 p.m. | BMD          |                    |                                    |                    |
| 7:15 p.m. – 7:30 p.m. | METROHM      |                    |                                    |                    |
| 7:30 p.m. – 7:45 p.m. | METROHM      |                    |                                    |                    |

Day 3 – Wednesday - 30<sup>th</sup> September 2026 – National Fire Academy (NFA)

| SICC Series CBRNe Conference 2026 – 30 September 2026 |                                                                                                                                                                                          |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TIME                                                  | ACTIVITIES - NATIONAL FIRE ACADEMY                                                                                                                                                       |
| 7:30 a.m. – 8:45 a.m.                                 | Registration Desk open                                                                                                                                                                   |
| 08:45 a.m. – 09:30 a.m.                               | Registration, Welcome Coffee & Industrial Exhibition                                                                                                                                     |
|                                                       | <b>PLENARY SESSION 2</b><br><i>Room "Giorgio Mazzini" - Aula magna</i><br><b>CBRNe Health Security and Medical Preparedness: Protecting Society in Complex Emergency Scenarios</b>       |
| 09:30 a.m. – 10:00 a.m.                               | Institutional Welcome & Greetings from Authorities                                                                                                                                       |
| 10:00 a.m. – 10:30 a.m.                               | (P.S.2.1) <b>B. Gen. Florigio LISTA</b><br>KEYNOTE SPEAKER<br><i>Role of the Defence Institute for Biomedical Sciences in preparedness for CBRN emergencies</i>                          |
| 10:30 a.m. – 10:50 a.m.                               | (P.S.2.2) <b>Prof. Vasilis VASILIOU</b><br><i>"From Acute Exposure to Chronic Risk: An Exposomic Framework for Long-Term Health Surveillance After CBRN Events"</i>                      |
| 10:50 a.m. – 11:10 a.m.                               | (P.S.2.3) <b>Prof. Noburo TAKAMURA</b><br><i>"Experiences of crisis communication during radiation emergency and risk communication for recovery of the community in Fukushima"</i>      |
| 11:10 a.m. – 11:30 p.m.                               | (P.S.2.4) <b>Prof. Giuseppe NOVELLI</b><br><i>"Before the Exposure: Host Genomic Susceptibility and the Inherited Architecture of Population Vulnerability in CBRNe Health Security"</i> |

|                         |                                                                                                                                                                                                                    |                                  |                                    |                                                                                                        |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------|
| 11:30 p.m. – 11:50 p.m. | (P.S.1.5) Col. Matthias PORT<br>"Medical CBRN Protection of the German Armed Forces and Recent Achievements in RN Preparedness"                                                                                    |                                  |                                    |                                                                                                        |
| 11:50 p.m. – 12:10 p.m. | (P.S.1.6) Dr. Eng. Edoardo CAVALIERI D'ORO<br>"Creating a European CBRN Response Capacity: A Preparedness-by-Design Methodology for Multidisciplinary Disaster Management"                                         |                                  |                                    |                                                                                                        |
| 12:10 p.m. – 12:30 p.m. | (P.S.1.7) Maj. Ahmad SAQAF<br>"Operational Response to the Ebola Outbreak. An operational experience from Abu Dhabi — pre-hospital care, points-of-entry screening, decontamination and interagency coordination"  |                                  |                                    |                                                                                                        |
| 12:30 p.m. – 12:50 p.m. | (P.S.1.8) Dr. Francesco PILO<br>CBRN Events: The Role of the Italian National Fire and Rescue Service's Centro Studi ed Esperienze (CSE) in the Testing and Decontamination of Personal Protective Equipment (PPE) |                                  |                                    |                                                                                                        |
|                         | Chairperson - Dr. Alba IANNOTTI                                                                                                                                                                                    |                                  |                                    |                                                                                                        |
| 12:50 p.m. – 1:45 p.m.  | Lunch Break / Industrial Exhibition                                                                                                                                                                                |                                  |                                    | CBRNe Mobile Laboratories<br>Italian Fire Fighters<br>&<br>Italian Military Red Cross<br>Decon Station |
| 1:45 p.m. – 3:15 p.m.   | Poster Session 2 / Industrial Exhibition                                                                                                                                                                           |                                  |                                    |                                                                                                        |
| 3:15 p.m. – 3:45 p.m.   | Poster Session 2 / Industrial Exhibition / Tech. & Innovation Showcase: HEYL                                                                                                                                       |                                  |                                    |                                                                                                        |
|                         | Room 22 "Tosi Belefifi"                                                                                                                                                                                            | Room 19 "Paris"                  | Room 20 "Berlin"                   | Room 21 "London"                                                                                       |
| 3:45 p.m. – 4:00 p.m.   | Technical Session 6<br>(T.S.6.1)                                                                                                                                                                                   | Technical Session 9<br>(T.S.9.1) | Technical Session 11<br>(T.S.11.1) | IMLEX                                                                                                  |
| 4:00 p.m. – 4:15 p.m.   | Technical Session 6<br>(T.S.6.2)                                                                                                                                                                                   | Technical Session 9<br>(T.S.9.2) | Technical Session 11<br>(T.S.11.2) | IMLEX                                                                                                  |
| 4:15 p.m. – 4:30 p.m.   | Technical Session 6<br>(T.S.6.3)                                                                                                                                                                                   | Technical Session 9<br>(T.S.9.3) | Technical Session 11<br>(T.S.11.3) | IMLEX                                                                                                  |
| 4:30 p.m. – 4:45 p.m.   | Technical Session 6<br>(T.S.6.4)                                                                                                                                                                                   | Technical Session 9<br>(T.S.9.4) | Technical Session 11<br>(T.S.11.4) | IMLEX                                                                                                  |

|                              |                                      |                                   |                                     |       |
|------------------------------|--------------------------------------|-----------------------------------|-------------------------------------|-------|
| <b>4:45 p.m. – 5:00 p.m.</b> | Technical Session 6<br>(T.S.6.5)     | Technical Session 9<br>(T.S.9.5)  | Technical Session 11<br>(T.S.11.5)  | IMLEX |
| <b>5:00 p.m. – 5:15 p.m.</b> | Technical Session 6<br>(T.S.6.6)     | Technical Session 9<br>(T.S.9.6)  | Technical Session 11<br>(T.S.11.6)  | IMLEX |
| <b>5:30 p.m. – 5:45 p.m.</b> | Coffee Break / Industrial Exhibition |                                   |                                     |       |
| <b>5:45 p.m. – 6:00 p.m.</b> | Technical Session 6<br>(T.S.6.7)     | Technical Session 9<br>(T.S.9.7)  | Technical Session 11<br>(T.S.11.7)  | IMLEX |
| <b>6:00 p.m. – 6:15 p.m.</b> | Technical Session 6<br>(T.S.6.8)     | Technical Session 9<br>(T.S.9.8)  | Technical Session 11<br>(T.S.11.8)  | IMLEX |
| <b>6:15 p.m. – 6:30 p.m.</b> | Technical Session 6<br>(T.S.6.9)     | Technical Session 9<br>(T.S.9.9)  | Technical Session 11<br>(T.S.11.9)  | IMLEX |
| <b>6:30 p.m. – 6:45 p.m.</b> | Technical Session 6<br>(T.S.6.10)    | Technical Session 9<br>(T.S.9.10) | Technical Session 11<br>(T.S.11.10) | IMLEX |
| <b>6:45 p.m. – 7:00 p.m.</b> | Technical Session 6<br>(T.S.6.11)    | Technical Session 9<br>(T.S.9.11) | Technical Session 11<br>(T.S.11.11) | IMLEX |

Day 4 – Thursday - 1<sup>st</sup> October 2026 – National Fire Academy (NFA)

| SICC Series CBRNe Conference 2026 – 1 October 2026 |                                      |                                   |                                     |                                  |
|----------------------------------------------------|--------------------------------------|-----------------------------------|-------------------------------------|----------------------------------|
| TIME                                               | ACTIVITIES - NATIONAL FIRE ACADEMY   |                                   |                                     |                                  |
| 8:00 a.m. – 9:00 a.m.                              | Registration Desk open               |                                   |                                     |                                  |
|                                                    | <b>Room 22 "Tosi Beleffi"</b>        | <b>Room 19 "Paris"</b>            | <b>Room 20 "Berlin"</b>             | <b>Room 21 "London"</b>          |
| 9:00 a.m. – 9:15 a.m.                              | Technical Session 6<br>(T.S.6.12)    | Technical Session 9<br>(T.S.9.12) | Technical Session 11<br>(T.S.11.12) | Technical Session 8<br>(T.S.8.1) |
| 9:15 a.m. – 9:30 a.m.                              | Technical Session 6<br>(T.S.6.13)    | Technical Session 9<br>(T.S.9.13) | Technical Session 11<br>(T.S.11.13) | Technical Session 8<br>(T.S.8.2) |
| 9:30 a.m. – 9:45 a.m.                              | Technical Session 6<br>(T.S.6.14)    | Technical Session 9<br>(T.S.9.14) | Technical Session 11<br>(T.S.11.14) | Technical Session 8<br>(T.S.8.3) |
| 9:45 a.m. – 10:00 a.m.                             | Technical Session 6<br>(T.S.6.15)    | Technical Session 9<br>(T.S.9.15) | Technical Session 11<br>(T.S.11.15) | Technical Session 8<br>(T.S.8.4) |
| 10:00 a.m. – 10:15 a.m.                            | Technical Session 6<br>(T.S.6.16)    | Technical Session 9<br>(T.S.9.16) | Technical Session 11<br>(T.S.11.16) | Technical Session 8<br>(T.S.8.5) |
| 10:15 a.m. – 10:30 a.m.                            | Technical Session 6<br>(T.S.6.17)    | Technical Session 9<br>(T.S.9.17) | Technical Session 11<br>(T.S.11.17) | Technical Session 8<br>(T.S.8.6) |
| 10:30 a.m. – 10:45 a.m.                            | Technical Session 6<br>(T.S.6.18)    | Technical Session 9<br>(T.S.9.18) |                                     | Technical Session 8<br>(T.S.8.7) |
| 10:45 a.m. – 11:15 a.m.                            | Coffee Break / Industrial Exhibition |                                   |                                     |                                  |
| 11:15 a.m. – 11:30 a.m.                            | Technical Session 6<br>(T.S.6.19)    | Technical Session 9<br>(T.S.9.19) |                                     | Technical Session 8<br>(T.S.8.8) |
| 11:30 a.m. – 11:45 a.m.                            | Technical Session 6<br>(T.S.6.20)    | Technical Session 9<br>(T.S.9.20) |                                     | Technical Session 8<br>(T.S.8.9) |

|                         |                                                                                      |                                   |                                  |                                                                                                        |
|-------------------------|--------------------------------------------------------------------------------------|-----------------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------|
| 11:45 a.m. – 12:00 p.m. | Technical Session 6<br>(T.S.6.21)                                                    | Technical Session 9<br>(T.S.9.21) |                                  | Technical Session 8<br>(T.S.8.10)                                                                      |
| 12:00 p.m. – 12:15 p.m. | Technical Session 6<br>(T.S.6.22)                                                    | Technical Session 9<br>(T.S.9.22) |                                  | Technical Session 8<br>(T.S.8.11)                                                                      |
| 12:15 p.m. – 12:30 p.m. | Technical Session 6<br>(T.S.6.23)                                                    | Technical Session 9<br>(T.S.9.23) |                                  | Technical Session 8<br>(T.S.8.12)                                                                      |
| 12:30 p.m. – 12:45 p.m. | Technical Session 6<br>(T.S.6.24)                                                    | Technical Session 9<br>(T.S.9.24) |                                  | Technical Session 8<br>(T.S.8.13)                                                                      |
| 12:45 p.m. – 2:25 p.m.  | Lunch Break / Industrial Exhibition                                                  |                                   |                                  | CBRNe Mobile Laboratories<br>Italian Fire Fighters<br>&<br>Italian Military Red Cross<br>Decon Station |
| 2:25 p.m. – 2:45 p.m.   | Industrial Exhibition / Tech. & Innovation Showcase: <b>ENEA / Univ. Tor Vergata</b> |                                   |                                  |                                                                                                        |
|                         | <i>Room 22 "Tosi Belefji"</i>                                                        | <i>Room 19 "Paris"</i>            | <i>Room 20 "Berlin"</i>          | <i>Room 21 "London"</i>                                                                                |
| 2:45 p.m. – 3:00 p.m.   | Technical Session 6<br>(T.S.6.25)                                                    | Technical Session 9<br>(T.S.9.25) | Technical Session 3<br>(T.S.3.1) | Technical Session 8<br>(T.S.8.14)                                                                      |
| 3:00 p.m. – 3:15 p.m.   | Technical Session 6<br>(T.S.6.26)                                                    | Technical Session 9<br>(T.S.9.20) | Technical Session 3<br>(T.S.3.2) | Technical Session 8<br>(T.S.8.15)                                                                      |
| 3:15 p.m. – 3:30 p.m.   | Technical Session 6<br>(T.S.6.27)                                                    | Technical Session 9<br>(T.S.9.26) | Technical Session 3<br>(T.S.3.3) | Technical Session 8<br>(T.S.8.16)                                                                      |
| 3:30 p.m. – 3:45 p.m.   | Technical Session 6<br>(T.S.6.28)                                                    | Technical Session 9<br>(T.S.9.27) | Technical Session 3<br>(T.S.3.4) | Technical Session 8<br>(T.S.8.17)                                                                      |
| 3:45 p.m. – 4:00 p.m.   | Technical Session 6<br>(T.S.6.29)                                                    | Technical Session 9<br>(T.S.9.28) | Technical Session 3<br>(T.S.3.5) | Technical Session 8<br>(T.S.8.18)                                                                      |
| 4:00 p.m. – 4:30 p.m.   | Coffee Break / Industrial Exhibition                                                 |                                   |                                  |                                                                                                        |
| 6:00 p.m.               | Bus departures from NFA to Conference Dinner Venue                                   |                                   |                                  |                                                                                                        |

|                        |                                                                                                                             |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| 6:30 p.m. – 7:00 p.m.  | Estimated Arrival at the Conference Dinner Venue and Seating of Guests                                                      |
| 7:00 p.m. – 7:15 p.m.  | <b>Diamond Sponsor Welcome Address Conference Dinner - Abu Dhabi Civil Defence Authority<br/>Best Poster Award Ceremony</b> |
| 7:15 p.m. – 10:30 p.m. | <b>Conference Dinner</b>                                                                                                    |

Day 5 – Friday - 2<sup>nd</sup> October 2026 – National Fire Academy (NFA)

| SICC Series CBRNe Conference 2026 – 2 October 2026 |                                      |                                   |                                   |                                   |
|----------------------------------------------------|--------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| TIME                                               | ACTIVITIES - NATIONAL FIRE ACADEMY   |                                   |                                   |                                   |
| 8:00 a.m. – 9:00 a.m.                              | Registration Desk open               |                                   |                                   |                                   |
|                                                    | <b>Room 22 "Tosi Beleffi"</b>        | <b>Room 19 "Paris"</b>            | <b>Room 20 "Berlin"</b>           | <b>Room 21 "London"</b>           |
| 9:00 a.m. – 9:15 a.m.                              | Technical Session 2<br>(T.S.2.1)     | Technical Session 9<br>(T.S.9.29) | Technical Session 3<br>(T.S.3.6)  | Technical Session 8<br>(T.S.8.19) |
| 9:15 a.m. – 9:30 a.m.                              | Technical Session 2<br>(T.S.2.2)     | Technical Session 9<br>(T.S.9.30) | Technical Session 3<br>(T.S.3.7)  | Technical Session 8<br>(T.S.8.20) |
| 9:30 a.m. – 9:45 a.m.                              | Technical Session 2<br>(T.S.2.3)     | Technical Session 9<br>(T.S.9.31) | Technical Session 3<br>(T.S.3.8)  | Technical Session 8<br>(T.S.8.21) |
| 9:45 a.m. – 10:00 a.m.                             | Technical Session 2<br>(T.S.2.4)     | Technical Session 9<br>(T.S.9.32) | Technical Session 3<br>(T.S.3.9)  | Technical Session 8<br>(T.S.8.22) |
| 10:00 a.m. – 10:15 a.m.                            | Technical Session 2<br>(T.S.2.5)     | Technical Session 9<br>(T.S.9.33) | Technical Session 3<br>(T.S.3.10) | Technical Session 8<br>(T.S.8.23) |
| 10:15 a.m. – 10:30 a.m.                            | Technical Session 2<br>(T.S.2.6)     | Technical Session 9<br>(T.S.9.34) | Technical Session 3<br>(T.S.3.11) | Technical Session 8<br>(T.S.8.24) |
| 10:30 a.m. – 10:45 a.m.                            | Technical Session 2<br>(T.S.2.7)     | Technical Session 9<br>(T.S.9.35) | Technical Session 3<br>(T.S.3.12) | Technical Session 8<br>(T.S.8.25) |
| 10:45 a.m. – 11:15 a.m.                            | Coffee Break / Industrial Exhibition |                                   |                                   |                                   |
| 11:15 a.m. – 11:30 a.m.                            | Technical Session 2<br>(T.S.2.8)     | Technical Session 9<br>(T.S.9.35) | Technical Session 3<br>(T.S.3.13) | Technical Session 8<br>(T.S.8.26) |
| 11:30 a.m. – 11:45 a.m.                            | Technical Session 2<br>(T.S.2.9)     | Technical Session 9<br>(T.S.9.36) | Technical Session 3<br>(T.S.3.14) | Technical Session 8<br>(T.S.8.27) |

|                         |                                                                                                                                                                    |  |                                   |                                                                                                        |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------|--------------------------------------------------------------------------------------------------------|
| 11:45 a.m. – 12:00 p.m. | Technical Session 2<br>(T.S.2.10)                                                                                                                                  |  | Technical Session 3<br>(T.S.3.15) | Technical Session 8<br>(T.S.8.28)                                                                      |
| 12:00 p.m. – 12:15 p.m. | Technical Session 2<br>(T.S.2.11)                                                                                                                                  |  | Technical Session 3<br>(T.S.3.16) | Technical Session 8<br>(T.S.8.29)                                                                      |
| 12:15 p.m. – 12:30 p.m. | Technical Session 2<br>(T.S.2.12)                                                                                                                                  |  | Technical Session 3<br>(T.S.3.17) |                                                                                                        |
| 12:30 p.m. – 12:45 p.m. | Technical Session 2<br>(T.S.2.13)                                                                                                                                  |  | Technical Session 3<br>(T.S.3.18) |                                                                                                        |
| 1:00 p.m. – 1:15 p.m.   | Technical Session 2<br>(T.S.2.14)                                                                                                                                  |  | Technical Session 3<br>(T.S.3.19) |                                                                                                        |
|                         |                                                                                                                                                                    |  | Technical Session 3<br>(T.S.3.20) |                                                                                                        |
| 1:15 p.m. – 2:15 p.m.   | Lunch Break / Industrial Exhibition                                                                                                                                |  |                                   | CBRNe Mobile Laboratories<br>Italian Fire Fighters<br>&<br>Italian Military Red Cross<br>Decon Station |
|                         | <b>PLENARY SESSION 3</b><br><i>Room "Giorgio Mazzini" - Aula magna</i>                                                                                             |  |                                   |                                                                                                        |
|                         | <b>Emerging Technologies, Industrial<br/>Transformation and Future CBRNe Risk Landscapes</b>                                                                       |  |                                   |                                                                                                        |
| 2:15 p.m. – 2:30 p.m.   | Institutional Welcome & Greetings from Authorities                                                                                                                 |  |                                   |                                                                                                        |
| 2:30 p.m. – 3:00 p.m.   | (P.S.3.1) <b>Prof. Thomas DEKORSY</b><br>KEYNOTE SPEAKER<br><i>"Laser-based CBRNe Stand-Off Detection at German Aerospace Center (DLR)"</i>                        |  |                                   |                                                                                                        |
| 3:00 p.m. – 3:20 p.m.   | (P.S.3.2) <b>Dr. Francesco CAMPANELLA</b><br><i>"Perspectives of a new Italian nuclear program: security strategies impact to support a new cultural approach"</i> |  |                                   |                                                                                                        |

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|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3:20 p.m. – 3:40 p.m. | (P.S.3.3) <b>Lt. Col. Abdulaziz ALTAMIMI</b><br><i>"Beyond Response: Building the AI-Enabled Future of CBRNE Emergency Management"</i>                                                                                         |
| 3:40 p.m. – 4:00 p.m. | (P.S.3.4) <b>Prof. Pasquale GAUDIO</b><br><i>"Two Decades of DIAL-Based Stand-Off Chemical Sensing: From CO<sub>2</sub> Laser Prototypes to Miniaturized Multi-Hazard Monitoring Systems for Future CBRNe Risk Landscapes"</i> |
| 4:00 p.m. – 4:20 p.m. | (P.S.3.5) <b>Dr. Salvatore CORRAO</b><br><i>"Joint Stars 2025" Exercise: Focus on the CBRN Activities Carried Out</i>                                                                                                          |
| 4:20 p.m. – 4:40 p.m. | (P.S.3.6) <b>Dr. Francesco MAIORANA</b><br><i>"CBRN Collaboration Between Civil Operators and Defense: Technological Evolution and Geopolitical Context"</i>                                                                   |
| 4:40 p.m. – 4:50 p.m. | <b>Best Presentation Award Ceremony</b>                                                                                                                                                                                        |
| 4:50 p.m. – 5:00 p.m. | <b>Closing Remarks</b>                                                                                                                                                                                                         |
|                       | Chairperson - <b>Dr. Colomba RUSSO</b>                                                                                                                                                                                         |

Day 6 – Saturday - 3<sup>rd</sup> October 2026 – Faculty of Medicine and Surgery, University of Rome Tor Vergata

| SICC Series CBRNe Conference 2026 – 3 October 2026 |                                                                               |
|----------------------------------------------------|-------------------------------------------------------------------------------|
| TIME                                               | ACTIVITIES - FACULTY OF MEDICINE AND SURGERY - UNIVERSITY OF ROME TOR VERGATA |
| 8:30 a.m. – 9:00 a.m.                              | WELCOME ADDRESSES                                                             |
| 9:00 a.m. – 9:50 a.m.                              | SLOT 1 - HANDS ON CBRNe Technologies                                          |
| 10:00 a.m. – 10:50 a.m.                            | SLOT 2 - HANDS ON CBRNe Technologies                                          |
| 11:00 a.m. – 11:50 a.m.                            | SLOT 3 - HANDS ON CBRNe Technologies                                          |
| 12:00 p.m. – 12:50 p.m.                            | SLOT 4 - HANDS ON CBRNe Technologies                                          |
| 1:00 p.m. – 1:50 p.m.                              | Break                                                                         |
| 2:00 p.m. – 2:50 p.m.                              | SLOT 5 - HANDS ON CBRNe Technologies                                          |
| 3:00 p.m. – 3:50 p.m.                              | SLOT 6 - HANDS ON CBRNe Technologies                                          |
| 4:00 p.m. – 5:00 p.m.                              | CBRNe School Diploma Ceremony and Closing Remarks                             |

## PLENARY SESSION 1: Hybrid Warfare and Global Instability: New Frontiers of Strategic Conflict and Societal Resilience

*Room “Giorgio Mazzini” – Aula magna*

**Chairperson - Prof. Andrea MALIZIA**

*Department of Biomedicine and Prevention, University of Rome Tor Vergata (Italy)*

*This plenary session will analyse the evolution of hybrid warfare through cyber operations, sabotage, disinformation, attacks against critical infrastructures, energy insecurity, and multidomain destabilization strategies. Particular attention will be devoted to current international crises, protection of strategic assets, societal resilience, and the convergence between conventional and non-conventional threats shaping the future security environment.*

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### **KEYNOTE SPEAKER – PLENARY SESSION 1**

#### **(P.S.1.1) Hybrid Warfare and Global Instability: The Iranian Model Tehran Between Peace, Crisis, and Conflict**

**Lt. Gen. Giovanni Maria Iannucci**

*Commander ITA Joint Operations, Italian Ministry of Defence (Italy)*

#### **Abstract**

Iran has developed a “semi-permanent” model of hybrid warfare that draws on an exceptionally strong sense of religious and cultural identity. Starting from Tehran’s desired end state—namely, the ascendancy of the Shia world—this work examines the strategies, techniques, tactics and procedures employed to achieve this objective.

It explores informational, cyber, economic, and military instruments, including the use of drones, hostage diplomacy, and proxy forces, as well as the role played by political, military, and religious institutions. It considers activities conducted below the threshold of armed conflict, those undertaken in preparation for conflict, and those employed in support of military operations. Finally, it assesses how the Iranian model has evolved in response to the ongoing crisis.

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### **(P.S.1.2) The Italian Intel Center and the Hybrid Warfar**

**Maj. Gen. Enrico Pederzoli**

*Commander of the Italian INTEL CENTER, Italian Ministry of Defence (Italy)*

#### **Abstract**

Since its foundation in 1998, the Italian Intel Center (IC) has been taking part in prominent operational multidomain activities, providing Operational Theatres and Multinational Headquarters with assets and capabilities, giving a precious contribution in terms of Intelligence production and security. In order to accomplish its principal tasks and in accordance with the Allied publications, the complex hierarchical organization of the IC is based on 2 main Departments that are the functional core of the center: the Collection Department, that ensure the timely collect information by appropriate surveillance and reconnaissance assets, sources and agencies, and the Analysis Department, that is in charge of evaluation, analysis, integration and interpretation of information for delivering suitable military and technical intelligence. In hybrid warfare, the CBRN threat poses a critical challenge for military intelligence, requiring an integrated approach centered on two symbiotic imperatives: early warning and robust attribution. Because hybrid actors exploit sub-threshold tactics—such as covert dissemination, dual-use technologies, and targeted contamination of critical infrastructure—intelligence must operate "left of bang" to detect illicit supply chains, precursor procurement, and subtle environmental releases before systemic or biological harm takes hold. Concurrently, reducing the non-attribution window through multi-domain intelligence fusion (incorporating MASINT, technical biosurveillance, HUMINT, and cyber tracking) is vital to expose proxy or false-flag operations, neutralize plausible deniability, and provide decision-makers with actionable, defensible intelligence to ensure force protection and strategic deterrence.

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### **(P.S.1.3) National Crisis and Emergency Response in the Kingdom of Bahrain**

**Maj. Gen. Dr. Shaikh Hamad bin Mohammed Al Khalifa**

*Deputy Chief of Public Security within the Ministry of Interior of the Kingdom of Bahrain. (Kingdom of Bahrain)*

#### **Abstract**

This presentation highlights Bahrain's national approach to crisis and emergency management during recent regional security developments. It presents the country's integrated preparedness framework, including early warning systems, civil protection measures, interagency coordination, and continuity of essential services. Using two recent case studies involving critical infrastructure, the presentation demonstrates how unified command, risk assessment, and coordinated response strengthened national resilience and ensured public safety. The experience offers practical lessons on preparedness, response, recovery, and the protection of critical infrastructure against emerging threats.

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**(P.S.1.4) The Invisible Hazard: Psychological Impacts of CBRN Incidents on Firefighters and First Responders. A model from Abu Dhabi Civil Defence Authority (ADCDA)**

**Colonel/ Dr. Ibrahim Almarzooqi**

*Abu Dhabi Civil Defence Authority ADCDA, Abu Dhabi, UAE (United Arab Emirates)*

**Abstract**

Chemical, Biological, Radiological, and Nuclear (CBRN) incidents present unique operational challenges that extend beyond physical hazards. While significant attention has traditionally focused on exposure risks, decontamination procedures, and personal protective equipment (PPE), the psychological impact of CBRN environments on firefighters and first responders remains an important yet often underrecognized aspect of emergency response. Unlike conventional emergencies, CBRN incidents frequently involve invisible, odorless, and poorly understood threats that create heightened uncertainty and perceived risk. Responders are often required to make critical decisions while operating in restrictive PPE, managing limited situational awareness, and confronting concerns regarding contamination, long-term health effects, and potential exposure of colleagues and family members. These factors can contribute to increased stress, cognitive overload, decision fatigue, and reduced operational effectiveness during incidents. The evolving threat landscape further compounds these challenges. In addition to traditional concerns such as chemical releases, biological agents, and radiological events, firefighters increasingly encounter emerging hazards including lithium-ion battery fires, toxic industrial chemicals, illicit drug laboratories, and complex hazardous materials incidents. The uncertainty associated with these events can amplify psychological strain, even when actual exposure risks remain low. This study examines the psychological stressors associated with CBRN response, explores the relationship between perceived and actual risk, and reviews potential short- and long-term mental health consequences, including anxiety, hypervigilance, burnout, sleep disturbances, and post-traumatic stress symptoms. Drawing on operational experience and lessons from real-world incidents, the discussion highlights the importance of resilience-building strategies, effective communication, realistic training, peer support programs, and organizational mental health initiatives. As CBRN threats continue to evolve, responder preparedness must address both physical protection and psychological resilience (A model which has been implemented at Abu Dhabi Civil Defence Authority ADCDA). Integrating mental readiness into CBRN training and operational planning is essential for maintaining responder wellbeing, enhancing decision-making, and ensuring effective emergency response in increasingly complex hazard environments. Keywords: Abu Dhabi, risk assessment, psychology, first responders, resilience, CBRN.

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**(P.S.1.5) CBRNe emergency planning between Civil Defence and Civil Protection: the role of the Department of Firefighters, Public Rescue and Civil Defence and of the Italian National Fire and Rescue Service**

**Dr. Antonio Annecchini**

*Central Directorate for Technical, Fire Prevention and Energy Safety – EU Regulatory Affairs Office (Italy)*

**Abstract**

The Italian peninsula is exposed to a broad spectrum of emergencies and disasters, such as natural or industrial events, as well as to possible crises of different origin connected with terrorist attacks or with the effects of conflicts beyond its borders. The Italian civil security system is characterised by the interaction between two distinct domains: civil defence and civil protection. Within this context the complex security system rests on the flexible interaction among its numerous actors, according to a management system exhibiting specific complementarities. The multi-risk approach to management, proper to the civil defence and civil protection system, suggests the opportunity of combining the rigid chain of command of the "closed" civil defence system with the strong capillarity and extension of the "open" civil protection system, founded on the principle of subsidiarity. A strength of the Italian system is therefore that the two components share the same political-strategic apex and, although they develop according to different logics, reconverge at operational level with complementary functions and competences. Since the Italian civil security system is based on a multi-risk approach to crisis or emergency management, capable of adapting its interventions to each specific situation, it is reasonable to expect on the one hand a response to every type of event as a concerted effort among the base structures under the authority of the Government, in particular the Presidency of the Council of Ministers, and on the other an operational capability consistently aligned with expected and probable threats. There is no single "one-size-fits-all" approach; nevertheless, the invariants characterising the Italian civil security system concentrate attention on possible operational improvement scenarios based on: (1) exploiting the opportunities arising from flexible interaction between the civil defence and civil protection mechanisms for the management of every situation, in relation to the effects of the event itself as perceived by the population; and (2) the need to implement and strengthen the operational capability of the National Fire and Rescue Service in CBRNe matters, in order to maintain readiness and effectiveness against modern threats.

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### **(P.S.1.6) CBRN Defence in Modern Warfare**

**Col. Mariusz Młynarczyk**

*Director of the Transformation Support Department at the Joint CBRN Defence Centre of Excellence (Czech Republic)*

**Coauthor: Weronika Kukla-Młynarczyk**

*Excellence Department of Autonomous Mobility of Transport Research Centre, Joint CBRN Defence Centre of (Czech Republic)*

#### **Abstract**

The character of warfare is undergoing a profound transformation driven by the proliferation of autonomous systems, artificial intelligence (AI), advanced sensing technologies, and pervasive battlefield transparency. These developments are particularly significant for Chemical, Biological, Radiological and Nuclear (CBRN) defence, where the need to reduce human exposure, accelerate decision-making, and maintain operational effectiveness in contested environments creates strong incentives for the adoption of autonomous capabilities. This paper examines the future role of autonomous and semi-autonomous systems across the CBRN defence enabling components. Drawing on lessons identified from contemporary conflicts and emerging technology trends, the study analyses how uncrewed aerial systems (UAS), uncrewed ground systems (UGS), robotic platforms, distributed sensor networks, AI-enabled decision-support systems, and autonomous decontamination capabilities can transform CBRN operations. The paper argues that future CBRN defence will increasingly rely on human-machine teaming rather than exclusively human-operated processes. Autonomous systems will conduct high-risk reconnaissance, remote sampling, contamination mapping, stand-off detection, logistics support, casualty evacuation, and hazard management tasks while reducing personnel exposure to hazardous environments. Simultaneously, AI-driven analytics and sensor fusion will enable predictive threat assessment, automated warning and reporting, and near-real-time operational decision support. Beyond individual platforms, the study explores the emergence of autonomous battlefield ecosystems in which networks of sensors, AI-enabled decision engines, and uncrewed systems collaborate across multiple domains to generate a persistent understanding of the operational environment. Such capabilities have the potential to shorten detection-to-decision timelines, increase operational tempo, and provide resilient CBRN situational awareness in highly contested environments. However, increasing battlefield autonomy also introduces challenges related to trust, interoperability, command and control, cyber resilience, legal responsibility, and ethical governance. The paper therefore examines the appropriate balance between machine autonomy and meaningful human oversight within NATO CBRN defence operations. The paper concludes that autonomous and uncrewed systems will become a fundamental component of future CBRN capabilities at tactical, operational, and strategic levels. Their successful integration will require not only technological innovation but also corresponding developments in doctrine, organisation, training, leadership, interoperability, and standardisation. Future CBRN defence effectiveness will depend on the ability to create a resilient, networked, and autonomous system-of-systems capable of operating within highly contested multi-domain environments. Keywords: CBRN Defence, Autonomous Systems, Uncrewed Systems, Artificial Intelligence, Human-Machine Teaming, Multi-Domain Operations, Emerging and Disruptive Technologies, Robotics, Future Warfare, Sensor Fusion, CBRN Defence Capability Development.

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**(P.S.1.7) Building national CBRN resilience through industrial aggregation: A Model for Technology Transfer, Dual-Use Convergence, and SME Integration****Dr. Massimo Marinzi***SIX Security and defence domain Director, Thales Italia (Italy)***Abstract**

The progressive intensification of Chemical, Biological, Radiological, and Nuclear (CBRN) threats — driven by geopolitical instability, accelerating technological proliferation, and the strategic lessons derived from the ongoing conflict in Ukraine — has brought into sharp relief a structural weakness in Italy's national CBRN security architecture: the fragmentation of its CBRN industrial and scientific ecosystem. Research institutions, universities, specialized SMEs, and larger industrial operators continue to function in largely autonomous silos. This fragmentation constrains the country's capacity to generate scalable, interoperable, and cost-efficient CBRN capabilities at a moment when both military modernization imperatives and civil protection requirements demand a coherent, system-level response. This paper presents a proposal for a structured framework aimed at the consolidation of Italy's CBRN supply chain through the establishment of an industrial reference entity capable of catalysing sustainable collaboration among public research bodies, academic institutions, and the productive fabric of specialized SMEs and technology start-ups. The model proposes a replicable architecture suited to Italy's institutional landscape and industrial base. The proposed framework rests on three interdependent pillars.

The first concerns research valorisation and technology transfer. A structured, formalized interface between university-level research — particularly in detection and identification technologies, decontamination systems, personal protective equipment, and sensor-data integration — and industrial production remains largely absent in Italy. The model establishes effective pathways for translating scientific output into deployable operational capabilities, reducing innovation cycles and aligning research agendas with priorities jointly defined by military and civil defence stakeholders.

The second pillar addresses SMEs integration and industrial development. The Italian CBRN sector hosts a significant number of high-potential small and medium enterprises whose technological assets remain underexploited due to constrained market access, insufficient capitalization, and the structural absence of an aggregating industrial partner. The proposed model provides a coherent framework for their inclusion in an organized community/supply chain, facilitating access to national and international procurement programs, joint development initiatives, and strategic partnerships with larger industrial actors.

The third — and strategically most significant — pillar concerns the convergence of civil and military CBRN capabilities. The conflict in Ukraine has powerfully demonstrated that the compartmentalization of military NBC defence and civil protection CBRN response represents an operational and economic inefficiency that weakens both domains simultaneously. The adoption of harmonized standards, shared interoperability protocols, and dual-use procurement frameworks would reduce redundancy, accelerate capability deployment, and strengthen systemic national resilience in ways neither sector can achieve independently. The model proposed is conceived as both nationally scalable and architecturally compatible with European Defence Agency frameworks, NATO CBRN standards, and EU civil protection mechanisms. In this sense, it is not merely a domestic initiative but a contribution to a broader European

effort to rationalize and reinforce the collective CBRN industrial and scientific ecosystem — addressing a capability gap whose strategic relevance will only increase in the decade ahead.

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**(P.S.1.8) CBRNe Education, Training and Research: Mission and Vision of the University of Rome Tor Vergata**

**Dr. Alba Iannotti and Dr. Colomba Russo**

*International Master Courses in Protection Against CBRNe events, University of Rome “Tor Vergata” (Italy)  
HESAR s.r.l.s (Italy)*

**Abstract**

The University of Rome Tor Vergata has developed a multidisciplinary approach to CBRNe education, training and research, integrating academic knowledge, technological innovation and operational expertise. Through its International Master Courses in Protection against CBRNe Events, the University promotes advanced education aimed at preparing professionals, researchers and decision-makers to address complex chemical, biological, radiological, nuclear and explosive scenarios. The educational model combines theoretical foundations with practical training, exercises and direct interaction with national and international CBRNe stakeholders. Strong cooperation with military institutions, fire and rescue services, public authorities, research centres and industry represents a key element of this approach. Research activities focus on risk assessment, detection and monitoring technologies, modelling and simulation, emergency management, health protection and innovative solutions for CBRNe preparedness and response. Particular attention is devoted to translating scientific research into operational capabilities and evidence-based decision-making. International cooperation and participation in European and global initiatives further strengthen the connection between education, research and field applications. The University’s mission is to foster a new generation of CBRNe professionals capable of working across disciplinary and institutional boundaries. Its vision is to consolidate an integrated academic and operational ecosystem where education, training, research and innovation contribute to strengthening societal resilience and preparedness against current and emerging CBRNe threats.

## PLENARY SESSION 2: CBRNe Health Security and Medical Preparedness: Protecting Society in Complex Emergency Scenarios

*Room “Giorgio Mazzini” – Aula magna*

**Chairperson - Dr. Alba IANNOTTI**

*Department of Industrial Engineering, University of Rome Tor Vergata (Italy)*

*This plenary session will focus on the integration of healthcare preparedness, emergency medicine, biosafety, radioprotection, toxicology, and public health resilience within modern CBRNe frameworks. Discussions will address hospital readiness, medical countermeasures, contamination management, interagency coordination, and long-term consequence management during large-scale emergencies and non-conventional crises.*

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### **KEYNOTE SPEAKER – PLENARY SESSION 2**

#### **(P.S.2.1) Role of the Defence Institute for Biomedical Sciences in preparedness for CBRN emergencies**

**B. Gen. Florigio Lista**

*Defence Institute for Biomedical Sciences, Rome (Italy)*

#### **Abstract**

Defence Institute for Biomedical Sciences plays an important institutional role in the studies, research and advanced training in preparedness for large-scale CBRN events, especially regarding radiological/nuclear emergencies and biological threats. The main focus is on innovative biotechnological applications for the prevention, diagnosis and treatment of the clinical effects associated with exposure to biological agents and ionizing radiation. The laboratory and clinical skills in CBRN field have also been developed through collaborations in national and international Networks. The operational capability of this Institute has been confirmed by the results obtained in intercomparison exercises carried out by international research task groups.

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**(P.S.2.2) From Acute Exposure to Chronic Risk: An Exposomic Framework for Long-Term Health Surveillance After CBRN Events**

**Prof. Vasilis Vasiliou**

*Susan Dwight Bliss Professor of Epidemiology; Director of Global Environmental Health Sciences and Translational Exposomics, Department of Environmental Health Sciences, Yale School of Public Health, Yale University (UNITED STATES) (USA)*

**Abstract**

Acute CBRN response has matured around triage, decontamination, and treatment of highly exposed individuals in the first hours and days after an event. Far less developed is the biological tracking of what happens to exposed populations afterward, as subclinical injury accumulates over years into measurable disease. The exposome framework, developed to characterize complex, chronic, and mixed environmental exposures, offers a template that CBRN medical preparedness currently lacks. Drawing on translational work in PFAS toxicology, alcohol- chemical interactions, and the ExposoGenomics approach to gene-environment interaction, this talk presents a framework in which multi-omic biomarkers of exposure and early biological effect are layered onto existing emergency response architecture, enabling longitudinal, population-level health surveillance. Rather than treating the acute and chronic phases of CBRN response as separate domains, the framework embeds biobanking, biomarker panels, and registry enrollment directly into the response protocol itself, turning the “green zone” of an emergency into the starting point for decades-long outcome tracking rather than an endpoint. The talk outlines the operational and scientific requirements for such a biosurveillance layer and situates it as a necessary complement to acute response: protecting not only survivors of the event itself, but the long-term health of the populations and territories affected by it.

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**(P.S.2.3) Experiences of crisis communication during radiation emergency and risk communication for recovery of the community in Fukushima**

**Prof. Noburo Takamura**

*Director, The Great East Japan Earthquake and Nuclear Disaster Memorial Museum (Fukushima Prefecture) Professor, Department of Disaster Resilience and Science, Atomic Bomb Disease Institute, Nagasaki University Vice Director, Institute of Environmental Radioactivity, Fukushima University Committee member, the Prefectural Oversight Committee for the Fukushima Health Management Survey (Japan)*

**Abstract**

Nuclear disasters are far less common than natural hazards, yet the Fukushima Daiichi Nuclear Power Station accident demonstrated how profoundly they can disrupt society. Much of this disruption arises from latent fears of radiation, making crisis management and effective communication essential. Scientists play a key role not only in radiological emergency medicine for highly exposed workers but also in supporting crisis communication. Crisis communication involves providing information to residents and communities during a disaster. Unlike ordinary risk communication, it targets people experiencing severe disruption and emotional strain. After the FDNPS accident, many residents faced intense stress and confusion, which impaired their ability to understand or remember information. Therefore, messages must be simple, clear, and free of technical terminology.

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**(P.S.2.4) Before the Exposure: Host Genomic Susceptibility and the Inherited Architecture of Population Vulnerability in CBRNe Health Security**

**Prof. Giuseppe Novelli**

*Full Professor of Medical Genetics, Department of Biomedicine and Prevention, School of Medicine and Surgery, University of Rome Tor Vergata; Member of the National Committee for Biosafety, Biotechnology and Life Sciences (CNBBSV), Presidency of the Council of Ministers (ITALY)*

**Abstract**

CBRNe medical preparedness allocates countermeasures on the implicit assumption of a biologically uniform exposed population. Human genomics shows that this assumption fails precisely at the tails of the distribution, where mortality concentrates. The COVID-19 pandemic provided the largest natural experiment ever conducted on this question: rare deleterious variants in the type I interferon pathway, including X-linked TLR7 deficiency and defects along the TLR3-IRF7 axis, together with their functional phenocopy represented by neutralizing autoantibodies against type I interferons, account for a substantial fraction of otherwise unexplained critical cases, while common variants at 3p21.31, OAS1, DPP9 and TYK2 modulate risk at population scale. The same architecture applies to other biological agents, whether deliberately released or naturally emerging: inborn errors of immunity can convert a survivable exposure into a lethal one, and pharmacogenomic variation determines who actually responds to the antiviral or antimicrobial countermeasure that has been stockpiled and deployed. This talk proposes adding a pre-event genomic layer to CBRNe health security, as a complement to post-event exposure monitoring. Three operational components are outlined: stratification of responder corps and vulnerable civilian groups according to established susceptibility loci; genotype-informed prioritization in prophylaxis, vaccination and countermeasure allocation under conditions of scarcity; and the recognition that existing clinical genomic infrastructure, including rare disease diagnostic networks, newborn screening programs and population biobanks, constitutes a latent preparedness asset requiring only governance and interoperability to be activated in an emergency. The talk closes on the conditions that make such an approach acceptable: non-discrimination, data protection, equity of access, and containment of dual-use risk. Knowing who is vulnerable before the event and who has been harmed after it are two halves of the same medical preparedness doctrine.

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**(P.S.2.5) Medical CBRN Protection of the German Armed Forces and Recent Achievements in RN Preparedness**

**Col. Matthias Port**

*German Army, German Ministry of Defence (Germany)*

**Abstract**

CBRN threats have grown sharply over the past decade, driven by expanding state arsenals, shifting doctrines, and repeated terrorist attacks, demanding a scientifically grounded medical concept spanning prevention, diagnosis, treatment, and aftercare. Germany concentrates its military medical CBRN expertise at the Bundeswehr Medical Academy (SanAkBw) in Munich with three research institutes in radiobiology, microbiology, and pharmacology/toxicology. This nationally unique capability fulfills statutory and treaty obligations, cooperates with the OPCW, WHO, and IAEA, and is accredited for reference-laboratory service to civilian public health. The deployable MedABCSch Task Force makes this expertise operational and serves as the central training platform. Recent radiological and nuclear preparedness advances include the H-Module, the StTARS course, and current WHO and SSK documents in the field.

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**(P.S.2.6) Creating a European CBRN Response Capacity: A Preparedness-by-Design Methodology for Multidisciplinary Disaster Management**

**Dr. Edoardo Cavalieri D'Oro**

*National Italian Fire and Rescue Service (Italy)*

**Abstract**

The rescEU CBRN-DSIM-IT project represents an innovative and risk-based design process for the creation of a European deployable CBRN response capacity. Unlike conventional procurement models based on the acquisition of existing products or manufacturer-led solutions, the capacity was developed through a preparedness-by-design approach, starting from threat scenarios, operational risks, mission functions and the specific sub-functions required in complex CBRN events. The capacity was designed to operate across the entire Disaster Management Cycle, from preparedness to response and recovery, and to address biological, chemical, radiological and nuclear scenarios, including mixed events, accidental releases and civil-defense-related situations. Its architecture reflects both a risk-based prioritization of capabilities and the typical zoning of a CBRN emergency, with different sub-units conceived to operate in red, yellow, green and support areas according to their role in detection, sampling, monitoring, identification, decontamination, logistics, command and control, welfare and specialist transport. Particular attention was given to sustainability during international deployments, interoperability with host nation authorities, multi-agency coordination and ergonomic requirements related to hazardous material handling, vehicle deployment, containerized laboratories, emergency operations and recovery activities. The project therefore provides a case study of disruptive multidisciplinary design in the CBRN field, combining operational doctrine, scientific expertise, civil protection needs, risk assessment, advanced technologies, vehicle engineering and Italian manufacturing capability into a coherent,

deployable and sustainable European response system, while also reflecting a distinctive Italian design ethos based on functionality, ergonomics, technical elegance and manufacturing quality.

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**(P.S.2.7) Operational Response to the Ebola Outbreak. An operational experience from Abu Dhabi — pre-hospital care, points-of-entry screening, decontamination and inter-agency coordination**

**Major Ahmad Saqaf**

*Ambulance Department Abu Dhabi Civil Defense Authority United Arab Emirates (United Arab Emirates)*

**Abstract**

The 2014–2016 West African Ebola outbreak highlighted the need for countries with major international transport hubs to establish effective preparedness systems for the potential importation of high-consequence infectious diseases. In Abu Dhabi, the Ambulance Department, within the Civil Defence system, developed an integrated operational response aimed at early detection, responder protection, safe patient transport, decontamination, and inter-agency coordination. Preparedness activities focused on screening travellers at both airport and seaport points of entry, using travel and exposure history combined with clinical warning signs to identify suspected cases. Once a suspected case was detected, a predefined command and communication chain connected Civil Defence dispatch, the Unified National Medical Operations Command (UNMOC), the designated receiving hospital, and specialised CBRNE and Hazardous Materials capabilities. Suspected patients were isolated and transported using dedicated decontamination ambulances, while strict personal protective equipment, donning and doffing procedures, and post-transport decontamination measures were implemented to protect personnel and maintain operational readiness. A key component of the response was the development of standardised operational procedures and specialist-led training covering disease recognition, PPE use, patient isolation and handling, decontamination, and coordination among responding organisations. The experience demonstrated that pre-established inter-agency relationships, a designated receiving hospital, consistent procedures across different points of entry, and continuous practical training are critical elements of effective biological emergency preparedness. Operational challenges included responder fatigue associated with prolonged PPE use in a hot climate, maintaining real-time coordination among multiple organisations, sustaining readiness between exercises and actual events, and managing false alarms without reducing vigilance. The Abu Dhabi experience demonstrates that preparedness for imported biological threats depends not only on specialised equipment, but primarily on trained personnel, rehearsed procedures, effective command and communication structures, and coordination established before an emergency occurs.

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**(P.S.2.8) CBRN Events: The Role of the Italian National Fire and Rescue Service's Centro Studi ed Esperienze (CSE) in the Testing and Decontamination of Personal Protective Equipment (PPE)**

**Dr. Francesco Pilo**

Coauthors: P.D. Francesco Pilo, V.D.T.S. Michele Vignola, V.D.T.S. Vincenzo Russo, V.D.T.S. Oleana Olga Prato, D.V. Marcello Serpieri, D.V. Alessandro Grotta

*Central Directorate for Technical, Fire Prevention and Energy Safety – Research and Testing Centre, Italian Ministry of Interior (Italy)*

**Abstract**

The Centro Studi ed Esperienze (CSE) of the Italian National Fire and Rescue Service's Direzione Centrale per la Prevenzione e la Sicurezza Tecnica, Antincendio ed Energetica (DCPSTAE) represents the leading national hub for applied research, testing and standardisation in the fields of fire safety, material fire behaviour and performance assessment of personal protective equipment (PPE). Building on its established expertise in the characterisation of materials for fire reaction purposes, in compliance with the European Construction Products Regulation (CPR) and the EN 13501 standard, the CSE has recently expanded its scope by establishing a materials-testing laboratory dedicated to the study of PPE performance, degradation processes and requalification procedures. This development is of particular significance in the field of protection against chemical, biological, radiological and nuclear (CBRN) agents, where the preservation of certified performance characteristics is an essential requirement for safeguarding operators engaged in high-exposure scenarios. The laboratory is currently responsible for the efficiency control of type 1a-ET gas-tight suits, compliant with UNI EN ISO 943-1 and 943-2, designed for use with a self-contained breathing apparatus worn inside the suit and ensuring complete isolation of the operator from the contaminated environment. Periodic integrity checks are carried out by static inflation testing, in accordance with UNI EN 464 and ISO 17491, to identify leaks or structural alterations resulting from operational use or maintenance cycles. Analytical capability has been enhanced through advanced instrumentation: Scanning Electron Microscopy (SEM) with EDS microanalysis enables high-resolution morphological observation of surfaces, identification of microcracks, delamination and alterations in polymeric fibres, and qualitative and quantitative determination of the elemental composition of residual contaminants; the Wascator system reproduces industrial washing cycles under controlled conditions, enabling assessment of the cumulative effects of decontamination on the mechanical, chemical and protective properties of materials; and the Xenotest, by accelerated ageing under xenon-arc lamps, simulates the combined effects of UV radiation, temperature and humidity, allowing estimation of photo-oxidative degradation and loss of barrier properties over time. These activities aim at developing scientifically validated methodologies for the qualification of PPE reconditioning processes, contributing to national and international protocols for the standardisation of decontamination procedures in conventional and non-conventional CBRN scenarios.

## PLENARY SESSION 3: Emerging Technologies, Industrial Transformation and Future CBRNe Risk Landscapes

Room “Giorgio Mazzini” – Aula magna

**Chairperson - Dr. Colomba RUSSO**

*Department of Industrial Engineering, University of Rome Tor Vergata (Italy)*

*This plenary session will examine the impact of technological and industrial evolution on future radiological, nuclear, chemical, biological, and critical infrastructure risk scenarios. Topics will include advanced nuclear technologies, synthetic biology, industrial interdependencies, cyber-physical vulnerabilities, hazardous material monitoring, supply-chain fragilities, and systemic resilience strategies for increasingly interconnected high-impact environments.*

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### **KEYNOTE SPEAKER – PLENARY SESSION 3**

#### **(P.S.3.1) Laser-based CBRNe Stand-Off Detection at German Aerospace Center (DLR)**

**Prof. Thomas Dekorsy**

*German Aerospace Center (DLR, Stuttgart and Lampoldshausen, Germany (Germany))*

#### **Abstract**

The German Aerospace Center is one of German largest research organizations with more than 11,000 co-workers distributed over 55 institutes and 33 locations. Beside aviation, space, energy, and transportation research, research on security and defence is a core competence of DLR which horizontally connects all research areas. Research is performed in close cooperation with civil authorities and the armed forces. The Institute of Technical Physics has a focus in the field of CBRNe stand-off detection using laser systems for detection of aerosols and contaminations on surfaces. Systems are developed to be carried on unmanned ground and aerial vehicles in order to reduce the risks of personnel. The institute contributed to several NATO STO groups on CBRNe technology including the participation of field trials in order to benchmark our systems.

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**(P.S.3.2) Perspectives of a new Italian nuclear program: security strategies impact to support a new cultural approach**

**Dr. Francesco Campanella**

*Director ISIN (Italy)*

**Abstract**

The Italian Government is just now addressing the issue of a possible relaunch of a national nuclear program, 40 years after the 1987 referendum that established the stop of nuclear energy production. Beyond considerations regarding the technology to be pursued and the skills to be developed to be ready for such a demanding yet stimulating challenge, there is a clear perception that relaunching Italy's commitment to nuclear energy will require the capability of all system components— institutional, academic, and industrial—to share approaches and to work together. To do that could allow not only to enable a renewed regulatory framework. but also to change the cultural outlook of a country that is very often overly emotional, at times lacking synergy across its strategic components. Issues of security and territorial defense could be an appropriate driving force to fins modern and shared solutions, and it must be leveraged to the fullest extent.

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**(P.S.3.3) Beyond Response: Building the AI-Enabled Future of CBRNE Emergency Management**

**Lt. Col. Abdulaziz Altamimi**

*Abu Dhabi Civil Defence Authority - ADCDA (United Arab Emirates)*

**Abstract**

The nature of CBRNE risks is evolving rapidly due to technological innovation, industrial digitalization, autonomous systems, and increasingly interconnected critical infrastructures. While these transformations enhance operational efficiency, they simultaneously generate complex and multidimensional threats that challenge conventional emergency response models.

This presentation argues that the future of CBRNE emergency management must move beyond traditional response-centered strategies toward predictive, intelligence-led, and resilience-driven operational models. Rather than focusing solely on incident response, emergency organizations should leverage Artificial Intelligence (AI), autonomous robotics, unmanned aerial systems, advanced sensing technologies, digital twins, and predictive analytics to anticipate hazards, accelerate decision-making, enhance responder safety, and strengthen national resilience.

Drawing on practical emergency management perspectives, the presentation explores how AI can transform the complete emergency management cycle—from risk identification and preparedness to operational response and post-incident recovery. Particular attention will be given to protecting critical infrastructure against cyber-physical threats, improving interoperability among agencies, and maintaining human oversight over increasingly autonomous technologies.

The presentation concludes by proposing a strategic framework for AI-enabled CBRNE emergency management that balances innovation, governance, operational effectiveness, and public trust. It

emphasizes that the emergency responder of the future will not be replaced by intelligent machines but empowered by them.

Keywords: Artificial Intelligence, CBRNE, Emergency Management, Civil Defense, Critical Infrastructure, Digital Twins, Robotics, Predictive Analytics, Resilience.

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### **(P.S.3.4) Two Decades of DIAL-Based Stand-Off Chemical Sensing: From CO<sub>2</sub> Laser Prototypes to Miniaturized Multi-Hazard Monitoring Systems for Future CBRNe Risk Landscapes**

**Prof. Pasquale Gaudio**

Coauthors: Daniele Di Giovanni<sup>1</sup>, Michela Gelfusa<sup>1</sup>, Andrea Malizia<sup>2</sup>, Luca Martellucci<sup>1</sup>, Riccardo Rossi<sup>1</sup>, Alba Iannotti<sup>1</sup>, Colomba Russo<sup>1</sup>, Ivan Wyss<sup>1</sup>, Alessandro Puleio<sup>1</sup>, Novella Rutigliano<sup>1</sup>, Grace P. Xerri<sup>1</sup>, Nicola Simone<sup>1</sup>, Tayaaba Sajid<sup>1</sup>, Marta Damiano<sup>1</sup>, Valentina D'Agostino<sup>1</sup>, Simone Kaldas<sup>1</sup>, Villie Anagnostopoulou<sup>1</sup>, Sabrina Rao<sup>2</sup>, Federico Mancinelli<sup>2</sup>

1. University Rome Tor Vergata, Department of Industrial Engineering, Via Del Politecnico, 1 00133 Rome, Italy

2. University Rome Tor Vergata, Department of Biomedicine and Prevention, Via Montpellier, 1 00133 Rome, Italy

#### **Abstract**

Chemical stand-off detection has become a critical capability for defence, homeland security, environmental monitoring, and emergency response by enabling the remote identification of hazardous chemical agents while reducing risks to operators. Over the last two decades, advances in optical sensing, laser spectroscopy, infrared imaging, and hyperspectral systems have substantially improved detection range, sensitivity, selectivity, and operational flexibility. At the same time, advances in unmanned platforms, artificial intelligence, and data processing have significantly enhanced the capabilities of stand-off sensing systems and broadened their range of operational applications. This work presents an overview of recent developments in chemical stand-off detection technologies, focusing on the activities carried out since the early 2000s by the Quantum Electronics and Plasmas research group (QEP). The core of this work has been the design, development, and deployment of CO<sub>2</sub>-laser-based Differential Absorption LiDAR (DIAL) systems. These platforms evolved from laboratory prototypes to transportable and vehicle-mounted systems designed for operation under realistic outdoor conditions. They have demonstrated reliable stand-off detection of gases and vapours in realistic outdoor scenarios, contributing to the advancement of laser absorption spectroscopy (LAS) techniques for remote chemical sensing. Building on this foundation, the group has developed further miniaturised DIAL-based systems capable of acquiring environmental information under field conditions and adapting to different operational contexts. In simplified configurations designed to provide rapid alarms, these systems have been applied to wildfire-risk monitoring in forested environments and to real-time early-warning applications. In such context, small perturbations in the measured signals can provide information on the possible onset of hazardous events and provide an approximate localisation, which can subsequently be refined through identification and risk assessment. From the perspective of DIAL-based identification systems, the group has also pursued technological improvements through the integration of advanced signal-analysis methodologies and multi-wavelength measurement techniques. These approaches enable rapid detection and discrimination of multiple compounds, reducing response times and enhancing reliability in complex, multi-component environments typical of industrial and CBRNe

scenarios. The presentation will outline the main technological developments achieved by the research group over the last 20 years, highlighting the progression of funded projects, the systems developed, and the corresponding improvements in performance, robustness, and field readiness. Finally, ongoing integration efforts including hybridization with emerging sensor modalities, data fusion, and AI-assisted decision-making will be discussed to provide a perspective on next-generation stand-off chemical detection systems and their role in future interconnected, high-impact CBRNe risk landscapes.

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### **(P.S.3.5) "Joint Stars 2025" Exercise: Focus on the CBRN Activities Carried Out**

**Salvatore Corrao**

Co-authors: Damiano Zurlo, Mauro Mascia, Alessandra Licheri, Giuseppe Melis, Giovanni Fresu, Carletto Antonio Ganadu, Michele Corona, Serafino Efisio Corona, Christian Barella, Camilla Giorgi

*Direzione Regionale VV.F. per la Sardegna con il contributo della Direzione Centrale per l'Emergenza, Soccorso Tecnico e Antincendio Boschivo e i Comandi Provinciali di Nuoro, Sassari e Cagliari, Italian National Fire and Rescue Service, Ministry of the Interior, (Italy)*

#### **Abstract**

This work analyses the planning, organisation and operational response of the Italian National Fire and Rescue Service (CNVVF) within the joint exercise Joint Stars 2025 (JOST 25), held in Sardinia from 8 to 27 May 2025. The exercise offered the opportunity to test the CNVVF's response capability against unconventional threats and highly complex scenarios, verifying interoperability and inter-agency coordination with the Armed Forces, police forces, the Italian Red Cross and other State administrations. The Command and Control structure was organised according to the Incident Command System (ICS) model, articulated into Command, Operations, Planning, Logistics and Administration functions, ensuring linkage between the Regional Directorate, operations rooms, EXCON and field units. The CNVVF deployed specialist CBRN units, decontamination chains, air assets, advanced command posts and technical rescue teams. The core of the exercise concerned multi-risk and CBRN scenarios designed to validate Detection, Identification and Monitoring (DIM) procedures, together with cordoning, sampling, decontamination and clearance. Principal simulations included: a rail accident caused by a hybrid threat, with victim extrication and systemic emergency following a cyber attack on traffic nodes; radiological risk and a clandestine laboratory, involving confinement, rapid sampling of substances and radiopharmaceuticals and joint decontamination; search and rescue from an air crash, with wildfire suppression and search for missing persons; and biological risk and illicit trafficking, with management of biological contamination in a cross-border maritime cooperation context. Two aspects proved crucial for macro-emergency management: communications in the absence of mobile network coverage, where exclusive reliance on radio allowed personnel to train on diversified standards and equipment; and CBRN doctrinal harmonisation, the analysis revealing CBRN competences widespread across agencies but characterised by divergent approaches and priorities. The experience confirmed the strategic role of the CNVVF in managing high-impact and unconventional emergencies, validating command models and strengthening civil-military cooperation.

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### **(P.S.3.6) CBRN Collaboration Between Civil Operators and Defense: Technological Evolution and Geopolitical Context**

**Dr. Francesco Maiorana**

*KAM Industry and Strategy and Marketing Director, Thales Italia (Italy)*

#### **Abstract**

In an increasingly unstable geopolitical context, marked by hybrid threats, asymmetric conflicts, and evolving CBRN (Chemical, Biological, Radiological, Nuclear) risks, collaboration between civil and military operators plays a crucial role in ensuring an effective and coordinated response and to contribute to the overall resilience of a Country. Thales Italia, leveraging its expertise in defense and security systems in civil markets, contributes to strengthening this synergy, utilizing the latest technological advancements to improve prevention, detection, and mitigation of CBRN threats and to support collaboration and interoperability between civil and military operators.

The presentation analyzes how technological evolution is redefining civil-military collaboration models in the CBRN sector, with a focus on:

- Integrated detection systems: Advanced sensors, IoT platforms, and CBRN-equipped payloads enabling real-time monitoring of critical areas in both military operational scenarios (e.g., peacekeeping missions) and civil contexts (e.g., critical infrastructures, mass events).
- Data-sharing platforms: Solutions based on secure cloud and artificial intelligence that enable unified management of information between civil and military actors, facilitating a rapid and coordinated response in emergencies while keeping the most demanding security requirements.
- Dual-use technologies: Development of devices and materials (e.g., protective suits, decontamination systems) applicable in both military and civil contexts, optimizing resources and expertise while enlarging and fostering the supply chain.
- Joint training and exercises: Programs involving civil and military operators in realistic simulations to enhance preparedness and interoperability in complex CBRN scenarios.

The current geopolitical landscape, defined by international tensions, proliferation of unconventional weapons, and hybrid attacks, underscores the urgency of structured civil-military collaboration. Thales Italia, through its participation in national and international projects (e.g., EDF, NATO, EU), promotes innovative solutions that enable an integrated defense, capable of addressing today's challenges with effectiveness and resilience.

The objective is to demonstrate how technology, cooperation, and strategy can converge to strengthen collective security, ensuring comprehensive protection against CBRN threats in alignment with international standards and national defense requirements.

## TECHNICAL SESSION 1 – Integrated CBRNe Emergency, Communication & Crisis Management

### Chairpersons

- **Gen. B. Giorgio Guariglia** — Commander, NBC School of Rieti (Italy)
- **Col. Youssef Alkaabi** — Deputy Director of the CBRNe Department, Abu Dhabi Civil Defence Authority (United Arab Emirates)
- **Cmd. Pierpaolo Gentile** — Head of the Office for CBRN, Italian Firefighters – Ministry of Interior (Italy)

This session explores comprehensive strategies for managing CBRNe emergencies through a fully integrated, multi-agency approach that connects civilian, military, and industrial response systems. A successful emergency response requires not only operational readiness and technological capability but also effective communication and behavioural understanding across all levels of command. Topics include Command, Control and Communication (C3) structures, inter-agency coordination, public information strategies, and the management of misinformation and panic through risk communication. The session welcomes contributions on psychological resilience, stress management, and cognitive performance of decision-makers and responders under crisis pressure. Submissions may address inclusive operations for vulnerable citizens, cross-border coordination, and the role of early warning and digital communication platforms. Case studies and after-action reviews that demonstrate how human behaviour, communication, and leadership influence outcomes in CBRNe emergencies are particularly encouraged.

Ultimately, this session seeks to bridge technical response systems with the human and communicative dimensions of crisis management, strengthening both trust and coordination across agencies and the public.

**Keywords.** *Emergency Management; Crisis Coordination; C3 Systems; Risk Communication; Emergency Psychology; Interoperability; SOPs; Leadership; Resilience; Behavioural Dynamics; Lessons Learned.*

**(T.S.1.1) Integrated CBRNe Emergency, Communication & Crisis Management**

Giorgio Guariglia<sup>1</sup>

*1 - NBC School of Rieti, Italian Ministry of Defence (Italy)*

**(T.S.1.2) The Carabinieri Scientific Investigations Group (RaCIS): Excellence in Forensic Science Supporting Criminal Investigations**

Michele Cucuglielli<sup>1</sup>

*1 - Carabinieri Scientific Investigations Group (RaCIS, Italian Ministry of Defence (Italy)*

**(T.S.1.3) Twenty-Five Years After 9/11: Integrated Responses and Lessons Learned in CBRNe Emergency Response - the CNVVF Experience.**

Pierpaolo Gentile<sup>1</sup>

*1 - Office for Countering CBRN Risk, Central Directorate for Emergency, Technical Rescue and Forest Fire, National Fire and Rescue Service — CNVVF, Department of Fire Brigade, Public Rescue, and Civil Defense, Ministry of the Interior, Rome, (Italy)*

**(T.S.1.4) Excellence and operations in CBRN defense: strategic evolution and technical tasks of the Joint NBC Technical Logistic Center**

Ferdinando Sollo<sup>1</sup>

*1 - CETLI – Centro Tecnico Logistico Interforze CBRN – Italian Ministry of Defence (Italy)*

**(T.S.1.5) 28th “Pavia” Regiment - Italian Defence’s Only Unit Specialized in Operational Communications (Known in NATO Doctrine as Psychological Operations – PSYOPS)**

Marco Ferrara<sup>1</sup>

*1 - 28th “Pavia” regiment Italian Defence’s - Unit specialized in Operational Communications (known in NATO doctrine as Psychological Operations – PSYOPS) (Italy)*

**(T.S.1.6) Area Control Centre, Role and Tasks in CBRN Knowledge Management Processes.**

Simone Mancinelli<sup>1</sup>

*1 - NBC School of Rieti, Minister of defence (Italy)*

**(T.S.1.7) Study of Radionuclide Release from Exploded Reactor IV at Chernobyl NPP at the Beginning of May 1986. First-Hand Experience and Lessons Learned**

Yaugen Ryzhykau<sup>1</sup>

*1 - CBRN PROTECTION TCT BV (The Netherlands)*

**(T.S.1.8) Relevant CBRN Interventions by the National Fire and Rescue Service - Statistics and Considerations**

Damiano Zurlo<sup>1</sup>, Fabrizio Gargano<sup>1</sup>, Francesco Biasci<sup>1</sup>, Gabriele Scoccia<sup>1</sup>

*1 - Italian National Fire and Rescue Service, Ministry of the Interior, (Italy)*

**(T.S.1.9) The BEAMS System for Pre-Triage Operations**

Claudio Poggi<sup>1</sup>, Federico Angelini<sup>1</sup>, Giuseppe Caivano<sup>1</sup>, Claudio Ciceroni<sup>1</sup>, Massimiliano Guarneri<sup>1</sup>, Flavio Miglietta<sup>1</sup>

*1 - ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development (Italy)*

**(T.S.1.10) Military C.B.R.N. Emergency Response Structure of the Italian Red Cross**

Gerardo Di Ruocco<sup>1</sup>, Adriano Delle Donne<sup>1</sup>, Ambra Ciotti<sup>1</sup>, Laura Zambelli<sup>1</sup>

1 - Italian Red Cross - Volunteer Military Corps (Italy)

**(T.S.1.11) CONVEX-3 2025 Exercise Experience: Capacity Building Opportunity for the Italian Nuclear and Radiological Emergency Management System**

Luca Saverio Angelo Codispoti<sup>1</sup>, Silvia Scarpato<sup>1</sup>

1 - National Inspectorate for Nuclear Safety and radiation protection (ISIN), Roma (Italy)

**(T.S.1.12) CBRN Risks in the Management of Mass Graves and Permanence of Contaminants in the Burial Ground**

Laura Donato<sup>1</sup>, Michele Treglia<sup>1</sup>, Margherita Pallocci<sup>1</sup>, Giorgio Coppola<sup>1</sup>, Luigi Tonino Marsella<sup>1</sup>

1 - Department of Biomedicine and Prevention, University of Tor Vergata, Rome (Italy)

**(T.S.1.13) CBRN Risk Management and Emergency Preparedness in Mass Events: the Role of the Italian National Fire and Rescue Service in the 2025 Jubilee**

Chiara Iacovino<sup>1</sup>, Biancamaria Cristini<sup>1</sup>

1 - Italian National Fire and Rescue Service, Ministry of the Interior, (Italy)

**(T.S.1.14) Enhancing Healthcare Decisions Through GIS Applications**

Ibtissam Khalfaoui<sup>1,4</sup>, Loubna El Ansariac<sup>2,4</sup>, Amar Hammouch<sup>3,4</sup>

1 - Research Foundation for Development and Innovation in Science and Engineering (FRDISI) (Morocco)

2 - Graduate School of Biomedical Engineering and Health Techniques (SUPTECH SANTE) (Morocco)

3 - School of Water, Energy and Sustainable Development Technologies (SUPTECH ENVIRONNEMENT) (Morocco)

4 - PES, Research Team IMOSYS, Mohammadia School of Engineers, Rabat (Morocco)

**(T.S.1.15) Smart Crisis Management: The Integrated Role of Command and Control Systems with Modern Communication Technologies in Addressing Chemical and Biological Hazards.**

Khaled Ghenaïet<sup>1</sup>

1 - University of Continuous Education (Algeria)

**(T.S.1.16) Forensic Challenges in the Examination of Human Remains Following CBRNe Incidents**

Olga Bjelica<sup>1</sup>, Iva Beronja<sup>1</sup>, Kristina Čugurović<sup>1</sup>, Anastasija Baćina<sup>1</sup>

1 - University of Criminal Investigation and Police Studies, Faculty of Forensic Sciences and Engineering, Belgrade (Serbia)

**(T.S.1.17) Environmental Consequences of the Use of Depleted Uranium Ammunition in Kosovo and Metohija**

Predrag Kuzmanović<sup>1</sup>, Ana Branković<sup>1</sup>

1 - University of Criminal Investigation and Police Studies, Belgrade (Serbia)

**(T.S.1.18) A Virtual Radiological Source Search Training Tool for Mobile Detection Systems**

Giacomo Mangiagalli<sup>1</sup>, Massimo Morichi<sup>1</sup>, Paola Garosi<sup>1</sup>, Erica Fanchini<sup>1</sup>, Carlo Uguccioni<sup>1</sup>, Fabio Davolio<sup>1</sup>

1 - CAEN sys (Italy)

**(T.S.1.19) Next-Generation Host-Pathogen Imaging: an AI-Enabled Super-Resolution Imaging Platform for Cross-Pathogen Biological Threat Characterisation**

Sonja Frolich<sup>1</sup>, Tony Hooker<sup>2</sup>, Bart Eijkelkamp<sup>3</sup>, Nicholas Eyre<sup>4</sup>

1 - Research Centre for Infectious Diseases, School of Biological Sciences, Adelaide University, (Australia)

2 - Centre for Radiation Research, Education and Innovation, Adelaide University, (Australia)

3 - College of Science and Engineering, Flinders University, Adelaide, (Australia)

4 - College of Medicine and Public Health, Flinders University, Adelaide, (Australia)

**(T.S.1.20) An Olympic Arena, Where CBRN Meets Archaeological Heritage: the CBRN Surveillance at the Closing Ceremony of the Olympic Winter Games and the Opening Ceremony of the Paralympic Winter Games Milano Cortina 2026**

Vincenzo Puccia<sup>1</sup>

1 - Comando Vigili del Fuoco di Verona, Italian National Fire and Rescue Service, Ministry of the Interior, (Italy)

**(T.S.1.21) Conducting Remote Decontamination Tasks with Unmanned Ground Vehicles (UGVs) in CBRNe Scenarios**

Dieter Rothbacher<sup>1</sup>

1 - CBRN Protection GmbH, Austria (Austria)

**(T.S.1.22) CBRN: From Risk to Culture. How the Italian National Fire and Rescue Service is Addressing the Transformation**

Pierpaolo Gentile<sup>1</sup>, Michele Mazzaro<sup>2</sup>

1 - Office for Countering CBRN Risk, Central Directorate for Emergency, Technical Rescue and Forest Fire National Fire and Rescue Service, Italian National Fire and Rescue Service, Ministry of the Interior, (Italy)

2 - Regional Directorate of the Campania Fire Brigade, National Fire and Rescue Service, Italian National Fire and Rescue Service, Ministry of the Interior, (Italy)

**(T.S.1.23) Interoperability Between the Healthcare System and Technical Rescue in CBRN Events: Experience from an Integrated Full-Scale Exercise in a Hospital Setting**

Vincenzo Giordano<sup>1</sup>, N. Erriu<sup>1</sup>, V. Oberti<sup>1</sup>, N. Rubino<sup>1</sup>, G. Bacis<sup>1</sup>, M. Gallo<sup>1</sup> et al.<sup>1</sup>

1 - Italian National Fire and Rescue Service, Ministry of the Interior, (Italy)

**(T.S.1.24) R&D projects impact on technological sovereignty and European industrial competitiveness and resilience**

Angelica Biddiri<sup>1</sup>

1 - Defence Sales Manager, Thales Italia, (Italy)

**(T.S.1.25) Thales Italia's Contribution to CBRN Defence Capabilities: Integrated CBRN Reconnaissance and Deployable Laboratory Capabilities for Rapid Threat Assessment and Decision Support**

Alessandra Dragani<sup>1</sup>

1 - Thales Italia's Contribution to CBRN Defence Capabilities: Integrated CBRN Reconnaissance and Deployable Laboratory Capabilities for Rapid Threat Assessment and Decision Support

**(T.S.1.26) Enhancing First Responder Preparedness for CBRNe Incidents Involving Vulnerable Populations**

Grace P. Xerri<sup>1,2,3</sup>, Riccardo Quaranta<sup>2,3,4</sup>, Gian Marco Ludovici<sup>3</sup>, Colomba Russo<sup>3,5</sup>, Alba Iannotti<sup>3,5</sup>, Andrea Malizia<sup>2,3</sup>, Pasquale Gaudio<sup>1</sup>

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3 - International Master Courses in "Protection against CBRNe events", Department of Biomedicine and Prevention, University of Rome Tor Vergata, Rome (Italy)

4 - National Institute for Nuclear Physics-National Laboratory of Frascati (INFN-LNF), Frascati (Italy)

5 - HESAR – Health Safety Environmental Research Association, Atina (Italy)

**(T.S.1.27) Disinformation as a Force Multiplier in CBRNe Incidents: Attack Vectors, Emerging Technologies, and Practitioner Preparedness**

Julian Neylan<sup>1</sup>

1 - Disarm Foundation (United Kingdom)

**(T.S.1.28) Cross-Domain Preparedness for Cyber-Enabled CBRNe Disruptions**

Genny Dimitrakopoulou<sup>1</sup>

1 - Center for Security Studies (KEMEA), Greece (Greece)

**(T.S.1.29) Municipal CBRNe Preparedness and Management in Germany: the Case of Halle (Saale)**

Marek Gottfried<sup>1</sup>

1 - Municipality of Halle (Germany)

**(T.S.1.30) Integration and Coordinated Response of Subregional Countries to Neutralise Chemical Weapons Emergencies Arising Due to Use of Chemical Weapons by Non-State Actors - India's Perspective**

Jaspal Singh Notay<sup>1</sup>, R. P. Singh<sup>1</sup>, Rajendra Singh<sup>1</sup>

1-Scientist Drdo India & Advisor Cabinet Secretariat India (India)

## TECHNICAL SESSION 2 – Geopolitics, Law & International Cooperation in CBRNe Risk Governance

### Chairpersons

- **Dr. Francesco Marelli** — Head of the CBRN Risk Mitigation and Security Governance Unit at UNICRI – United Nations Interregional Crime and Justice Research Institute (Switzerland)
- **Dr. Ralph Trapp** — International Disarmament Consultant, Chemical Weapons and Non-Proliferation Expert (France)
- **Amb. Krzysztof Paturej** — Director of ICCSS – International Centre for Chemical Safety & Security (Poland)

The global nature of CBRNe threats requires robust international collaboration supported by legal, political, and institutional frameworks. This session examines the geopolitical, legal, and economic dimensions of CBRNe preparedness and response, emphasizing how governance structures shape international readiness and crisis cooperation. Papers are invited on non-proliferation and disarmament treaties, dual-use technology regulation, and the management of cross-border risks in contexts affected by hybrid or asymmetric warfare.

Contributions addressing international response coordination, mutual assistance mechanisms, and the role of the United Nations, NATO, and the EU Civil Protection Mechanism (rescEU) in joint CBRNe operations are highly encouraged. The session also welcomes analyses of export control regimes, sanctions, and the impact of international trade dependencies on CBRNe resilience.

Economic and policy perspectives are equally relevant, including business continuity planning, economic security, and supply chain resilience under CBRNe or cyber-induced stress. Finally, contributions exploring ethical and governance implications of emerging technologies—AI, biotechnology, and space assets—within global CBRNe governance are particularly welcome.

**Keywords.** *International Cooperation; Governance; Non-Proliferation; Export Controls; Hybrid Threats; Economic Security; International Law; Policy Frameworks; Dual-Use Regulation; Global Partnerships.*

**(T.S.2.1) Countering CBRN Disinformation: Challenges, Impacts and Strategies for Building Societal Resilience**

Francesco Marelli<sup>1</sup>

1 - UNICRI - United Nations Interregional Crime and Justice Research Institute (Switzerland)

**(T.S.2.2) Chemical and Microbial Forensics – from Confirmation of Use to Attribution of Responsibility**

Ralf Trapp<sup>1</sup>

1 - Disarmament and WMD expert (France)

**(T.S.2.3) Beyond Inclusion and Exclusion: Advancing the CER Directive beyond EU Borders to Strengthen Regional Resilience against CBRNE and Hybrid Threats**

Danijela Ivanovic<sup>1</sup>, Marija Micovic<sup>1</sup>

1 – Master's student of national security, University of Criminal Investigation and Police Studies (UCIPS) (Serbia)

**(T.S.2.4) Strengthening CBRN Readiness in Italy: Governance, Territorial Stockpiling, and Operational Access through the SNAF Network**

Francesca Zaffino<sup>1</sup>

1 - Directorate - General for Health Emergencies (DGEME), Ministry of Health, Italy (Italy)

**(T.S.2.5) Building National CBRN Resilience through Industrial Aggregation: A Model for Technology Transfer, Dual-Use Convergence, and SME Integration**

Roberto Rossi<sup>1</sup>

1 - Thales Italia spa (Italy)

**(T.S.2.6) Algorithmic Asymmetry: AI-Driven Circumvention of Proliferation Regimes and the Erosion of Humanitarian Controls in Modern Warfare**

Stephen Johnson<sup>1</sup>

1 - Brett Edwards Bath University (United Kingdom)

**(T.S.2.7) Evolving Emergency Management for Maritime Transport of Dangerous Goods in the Mediterranean: Lessons Learned from the Arctic Metagaz Case**

Francesco Geri<sup>1</sup>, Andrea Gloria<sup>1</sup>, Alessandro Bucci<sup>1</sup>, Federico Mancinelli<sup>2</sup>, Sabrina Rao<sup>2</sup>, Andrea Malizia<sup>2</sup>

1 - Department of Industrial Engineering, University of Rome "Tor Vergata" (Italy)

2 - Department of Biomedicine and Prevention, University of Rome "Tor Vergata" (Italy)

**(T.S.2.8) EU Terrorism Attacks in the Last Five Years: Statistical Analysis and Emerging Trends**

Marco Carbonelli<sup>1</sup>, Claudio Todaro<sup>2</sup>

1 - Italian Prime Ministry office (Italy)

1 - O.S.S.I.S.Na. (Italy)

**(T.S.2.9) Integrating CBRNe Preparedness into the Safety, Security and Service Model for Major Sporting Events**

Antonio Parrilla<sup>1</sup>, Silvia Giannubilo<sup>1</sup>

*1 - Presidency of the Council of Ministers, Department for Sport (Italy)*

**(T.S.2.10) Reflections on the Key Characteristics of Strategic Leadership and Operational Management during Prolonged Crises, Emergencies, and Disaster Situations**

Amer Hosin<sup>1</sup>

*1 - Traumatic Stress and a Fellow of the Higher Education Academy (UK)*

**(T.S.2.11) Minds That Prevented War: Individual-Level Factors in Nuclear Decision-Making and Near-Miss Incidents**

Sabrina Rao<sup>1</sup>, Alba Iannotti<sup>2,3,4</sup>, Colomba Russo<sup>2,3,4</sup>, Federico Mancinelli<sup>1</sup>, Francesco Geri<sup>2</sup>, Andrea Gloria<sup>2</sup>, Alessandro Bucci<sup>2</sup>, Gian Marco Ludovici<sup>1,3</sup>, Alessandro Puleio<sup>2</sup> and Andrea Malizia<sup>1,3</sup>

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*3 - International Master Courses in "Protection Against CBRNe Events", University of Rome Tor Vergata (Italy)*

*4 - HESAR s.r.l.s., (Italy)*

**(T.S.2.12) International Humanitarian Law Violations in Attacks Resulting in CBRNe Scenarios: Assessing the Legal Implications in the Russia–Ukraine Armed Conflict**

Laura Zambelli<sup>1</sup>, Federico Mancinelli<sup>1</sup>, Alba Iannotti<sup>1</sup>, Colomba Russo<sup>1</sup>, Sabrina Rao<sup>1</sup>

*1 - Department of Biomedicine and Prevention, University of Rome Tor Vergata (Italy)*

**(T.S.2.13) Centralisation, Federalism and Expert Advice: Comparing CBRNe Preparedness in Finland and Switzerland**

Miikka Leinonen<sup>1</sup>

*1 - International Master Courses in Protection Against CBRNe Events, University of Rome Tor Vergata, (Italy)*

## TECHNICAL SESSION 3 – Artificial Intelligence, Digital Twins & Decision Support in CBRNe Risk Management

### Chairpersons

- **Prof. Francesco Marcelloni** — Department of Information Engineering, University of Pisa (Italy)
- **Lt. Col. Stephen Johnson** — British Army (United Kingdom)
- **Col. Bernd Allert** — German Army (Germany)

Artificial Intelligence (AI) and Digital Twin technologies are transforming how CBRNe events are anticipated, analysed, and managed. This session focuses on the integration of AI, predictive analytics, and simulation environments into risk assessment and operational decision-making. Topics include sensor fusion, early-warning algorithms, automated triage, and adaptive planning tools that support dynamic crisis management.

We invite studies demonstrating how Machine Learning (ML), Deep Learning (DL), and data-driven Decision Support Systems (DSS) can predict dispersion, dose, contamination, and exposure in real time. Papers addressing model interpretability, data governance, validation, and compliance with the EU AI Act are particularly relevant. The session also welcomes research on digital twin ecosystems, combining physical sensors, simulation models, and operational dashboards to support both training and live incident management.

Authors are encouraged to discuss performance evaluation, uncertainty quantification, and how AI-enabled systems enhance human decision-making without compromising accountability or transparency.

**Keywords.** *Artificial Intelligence; Digital Twin; DSS; Machine Learning; Predictive Analytics; Data Governance; Explainable AI; Human-in-the-Loop; Simulation; Model Validation.*

**(T.S.3.1) A Cognitive-Trait-Aware LLM Framework for Personalized Debunking against Strategic Disinformation**

Alessandro Bondielli <sup>2</sup>, Pietro Dell'Oglio <sup>1</sup>, Francesco Marcelloni <sup>1</sup>, Lucia C. Passaro <sup>2</sup>

1 - Dipartimento di Ingegneria dell'Informazione, Università di Pisa (Italy)

2 - Dipartimento di Informatica, Università di Pisa (Italy)

**(T.S.3.2) Algorithmic Asymmetry: AI-Driven Circumvention of Proliferation Regimes and the Erosion of Humanitarian Controls in Modern Warfare**

Stephen Johnson<sup>1</sup>

1 - Brett Edwards Bath University (United Kingdom)

**(T.S.3.3) Managing the Lifecycle Frontier: Integrating Frontier Safety Frameworks and Addressing Evaluation Gaps in CBRN Risk Surface Governance across AI Products**

Bernd Allert<sup>1</sup>

1 - German Army, German Ministry of Defence (Germany)

**(T.S.3.4) Safety and Security Culture and Artificial Intelligence: A Dangerous Relation?**

Carlo Rusconi <sup>1</sup>

1 - SOGIN spa (Italy)

**(T.S.3.5) An Integrated Command and Control Platform for Multi-Agent Security and Emergency Response**

Stathes Hadjiefthymiades<sup>1</sup>

1 - Dept. of Informatics & Telecommunications, University of Athens (Greece)

**(T.S.3.6) Wanting AI Is Not Enough: Uncovering the Factors That Drive and Block Artificial Intelligence Adoption in Civil Defence Organisations**

Humaid Al Ali <sup>1</sup>

1 - Abu Dhabi Police (United Arab Emirates)

**(T.S.3.7) Human Sensor Networks and Sustainable CBRNe Preparedness: Lessons Learned from European Full Scale Exercises in Critical Research Infrastructures (ENEA Casaccia Research Center)**

Nicola Ranieri <sup>1</sup>, Ilario Morriello <sup>1</sup>, Luigi De Dominicis <sup>2</sup>

1 - ENEA, Casaccia Research Centre, Rome 00123, Italy (Italy)

2 - ENEA, Frascati Research Centre, Rome 00123, Italy (Italy)

**(T.S.3.8) Exploring the Efficacy of Deconvolutional Neural Networks (DCNN) for Reconstructing Chemical and Radiological Dispersion Maps from Sensor Grids**

Alessandro Puleio <sup>1</sup>, Federico Mancinelli <sup>2</sup>, Luca Martellucci <sup>1</sup>, Riccardo Rossi <sup>1</sup>, Pasquale Gaudio <sup>1</sup>, Andrea Malizia <sup>2</sup>

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2 - Dep. of Biomedicine and Prevention, University of Rome "Tor Vergata", (Italy)

**(T.S.3.9) Digitalisation of the Incident Command System (ICS) and Event Planning & Response (EPR): State of the Art and Development Prospects**

Roberto Perna<sup>1</sup>, Cristiano Signoretti<sup>1</sup>

1 - Italian National Fire and Rescue Service, Ministry of the Interior, (Italy)

**(T.S.3.10) Managing the Lifecycle Frontier: Integrating Frontier Safety Frameworks and Addressing Evaluation Gaps in CBRN Risk Surface Governance across AI Products**

Stephen Johnson<sup>1</sup>

1 - Brett Edwards Bath University (United Kingdom)

**(T.S.3.11) From Paper Compliance to Demonstrated Protective Capability**

Manuel Carusi<sup>1</sup>

1 - National Inspectorate of Work - INL (Italy)

**(T.S.3.12) UAVs and Artificial Intelligence: Enhancing Responder Safety in CBRN Operations**

Mohamed Alabdouli<sup>1</sup>, Humaid Alshamsi<sup>1</sup>

1 - Abu Dhabi Civil Defence Authority (United Arab Emirates)

**(T.S.3.13) Anticipatory Biomedical Engineering: A Conceptual Framework for Responsible Innovation, Public Knowledge and Societal Resilience**

Ricardo L. Armentano<sup>1,2</sup>, Leandro J. Cymberknop<sup>3</sup>

1 - Department of Biological Engineering Universidad de la República, CenUR Litoral Norte, Paysandú, (Uruguay)

2 - Universidad Tecnológica Nacional, Buenos Aires, (Argentina)

3 - Centro de Investigación en Ingeniería Biomédica (CIBIO) Universidad Tecnológica Nacional Buenos Aires, (Argentina)

**(T.S.3.14) A Sensor-Dynamics-Aware Mission Design Framework for UAV Chemical Plume Mapping: Principles, Trade-Offs and Research Needs**

Luca Martellucci<sup>1</sup>, Alessandro Puleio<sup>1</sup>, Michela Gelfusa<sup>1</sup>, Daniele Di Giovanni<sup>1</sup>, Andrea Malizia<sup>2</sup>, Pasquale Gaudio<sup>1</sup>

1 - Department of Industrial Engineering, University of Rome "Tor Vergata" (Italy)

2 - Department of Biomedicine and Prevention, University of Rome "Tor Vergata" (Italy)

**(T.S.3.15) Operational Validation of an Integrated Autonomous Multi-Domain Surveillance System for the Physical Protection of Critical Research Infrastructures: The ENEA Frascati Case Study**

Nicola Ranieri<sup>1</sup>, Stefano Agnoli<sup>2</sup>, Vito Iacovino<sup>2</sup>, Luigi De Dominicis<sup>2</sup>

1 - ENEA, Casaccia Research Centre, Rome 00123, Italy (Italy)

2 - ENEA, Frascati Research Centre, Rome 00123, Italy (Italy)

**(T.S.3.16) Anticipating What Hasn't Happened yet: AI Models of Population Behaviour for CBRNe Emergency Coordination**

Adriana Pichierri<sup>1</sup>, Carmelo Macrì<sup>2,3</sup>, Claudio Di Turi<sup>4</sup>

1 - Dipartimento Prevenzione, ASP Cosenza (Italy)

2 - Internet & Idee Srl;

3 - DIMES – Dipartimento di Ingegneria Informatica, Modellistica, Elettronica e Sistemistica, Università della Calabria (UNICAL) (Italy)

4 - DiScAG – Dipartimento di Scienze Aziendali e Giuridiche, Università della Calabria (UNICAL)

**(T.S.3.17) From Scientific Innovation to Strategic Risk: AI, Dual-Use Technologies, and the Future of CBRN Security**

Patrick Wengler<sup>1</sup>, David Crouch<sup>1</sup>

*1 - Cranfield University (United Kingdom)*

**(T.S.3.18) Leadership Roles in Navigating Challenges in the Age of Artificial Intelligence, AI with Focus in the UAE, HE Training**

Haider Hussain<sup>1</sup>

*1 - Mohamed Bin Zayed University for Humanities (United Arab Emirates)*

**(T.S.3.19) Autonomous Weapons Systems: Mapping Risk and Social Acceptance across Levels of Intelligent Autonomy**

Deborah Evans<sup>1</sup>, Michael Coole<sup>1</sup>, Jumana Abu-Khalaf<sup>1</sup>

*1 - School of Science, Edith Cowan University, Joondalup, Western Australia (Australia)*

**(T.S.3.20) HERMIDOS: An Interactive Commander-Centred Decision Support Tool for Radiological CBRNe Operations**

Alessia Mattacchioni<sup>1</sup>

*1 - Selected Reserve Italian Army, Minister of Defence (Italy)*

## TECHNICAL SESSION 4 – Cybersecurity, Digital Safety & Critical Infrastructure Protection in the CBRNe Domain

### Chairpersons

- **Col. Mariusz Młynarczyk** — Director of Transformation Support Department, JCBRNe Centre of Excellence (Czech Republic)
- **Prof. Oleg Illiashenko** — Cybersecurity Course Director, Department of Computer Systems, Networks and Cybersecurity, National Aerospace University “Kharkiv Aviation Institute” (Ukraine)
- **Dr. Alba Fagnani** — Italian Prime Minister’s Office (Italy)

As CBRNe preparedness increasingly relies on digital infrastructures, cybersecurity and critical infrastructure protection (CIP) have become inseparable components of modern safety strategies. This session addresses the vulnerabilities of industrial control systems (ICS/OT), emergency communication networks, laboratories, hospitals, and energy or transport systems that form the digital backbone of national safety and emergency response.

Contributions are invited on threat modelling, intrusion detection, and incident response techniques that safeguard data integrity and physical safety. Case studies analysing cyberattacks on CBRNe-related systems—ransomware, data corruption, or SCADA manipulation—are particularly welcome. Authors are encouraged to present resilience engineering approaches, supply-chain protection, and AI-based intrusion prevention systems, as well as methods to ensure continuity of operations during coordinated cyber–physical crises.

The session also explores the governance and policy aspects of NIS2 compliance, risk communication, and public–private cooperation in protecting essential services. A dedicated focus will be given to the interdependencies between cyber networks and critical infrastructures, examining how a single failure can cascade across emergency, medical, and energy systems.

By integrating technological innovation, operational readiness, and strategic governance, this session aims to foster a shared vision of digital resilience—ensuring that the infrastructures underpinning CBRNe safety remain secure, reliable, and adaptive to evolving hybrid threats.

**Keywords.** *Cybersecurity; Critical Infrastructure Protection; ICS/OT Security; Digital Resilience; NIS2; Intrusion Detection; Hybrid Threats; Supply-Chain Security; Risk Communication; Resilience Engineering; Continuity of Operation*

**(T.S.4.1) On the Edge of Tomorrow: Digital Transformation in CBRN Defence**

Mariusz Młynarczyk<sup>1</sup>

1 - Transformation Support Department at the NATO Joint CBRN Defence Centre of Excellence (Poland)

**(T.S.4.2) Cyber Security and Dependability Assurance of Intelligent UXV Systems for Critical Infrastructure Protection in CBRNe-Relevant Dangerous Spaces**

Oleg Illiashenko<sup>1</sup>, Vyacheslav Kharchenko<sup>2</sup>, Herman Fesenko<sup>2</sup>, Ihor Kliushnikov<sup>2</sup>

1 - Cyber Security and Digital Forensics, Cybercrime and Security Innovation Centre, Leeds Beckett University, Leeds, (United Kingdom)

2 - Department of Cybersecurity and Intelligent Information Technologies, National Aerospace University "Kharkiv Aviation Institute", Kharkiv, (Ukraine)

**(T.S.4.3) CBRNe- and NaTech-resilient Design of Critical Public Buildings: An Assessment Framework for Preparedness at the Design Stage**

Alba Fagnani<sup>1</sup>

1 - International Master Courses in Protection Against CBRNe Events, University of Rome Tor Vergata, Rome (Italy)

**(T.S.4.4) When Earthquakes Strike Nuclear Medicine: Radiological Protection of Responders Managing Radioactive Patients and Human Remains**

Andrea Apollonio<sup>1</sup>, Angelo Tirabasso<sup>2</sup>, Silvio Valeri<sup>3</sup>, Marco D'Arienzo<sup>4</sup>, Leonardo Chiarucci<sup>5</sup>, Davide Ciucci<sup>6</sup>, Salvatore Donatiello<sup>6</sup>, Vittorio Cannata<sup>6</sup>, Gian Marco Contessa<sup>7</sup>

1 - Medical Physics Unit, IRCCS Bambino Gesù Children's Hospital, Rome, (Italy)

2 - Italian Workers Compensation Authority (INAIL)

3 - Institute of Radiation Protection, Radiation Protection Surveillance Laboratory for Facilities and Workplaces, ENEA Casaccia Research Center, Rome, (Italy)

4 - Medical Physics Section, ASL Roma 6, Albano Laziale, Rome, (Italy)

5 - Department of Biomedicine and Prevention, University of Rome "Tor Vergata" (Italy)

6 - Medical Physics Unit, IRCCS Bambino Gesù Children's Hospital, Rome, (Italy)

7 - Italian National Institute of Health (ISS)

**(T.S.4.5) Adversarial Resilience of One Health / CBRNe Indications & Warning Pipelines: A Red-Team Testbed for Information Integrity and Decision Quality (WARNLAB)**

Stefano Marletta<sup>1</sup>

1 - International Master Courses in Protection Against CBRNe Events, University of Rome Tor Vergata, Rome (Italy)

**(T.S.4.6) The AERISS (AErial Resilience for Infrastructure Safety and Security) Project: Drone-Based Operational Procedures for Critical Infrastructure Safety and Security.**

Ilario Morriello<sup>1</sup>, Giuseppe Caivano<sup>1</sup>, Danilo Casagrande<sup>1</sup>, Francesca D'Onza<sup>1</sup>, Luigi De Dominicis<sup>1</sup>, Mauro De Rossi<sup>2</sup>, Antonio Di Pietro<sup>1</sup>, Alessandro Giorgi<sup>2</sup>, Valerio Micelli<sup>1</sup>, Chiara Ormando<sup>1</sup>, Marco Parlanti<sup>3</sup>, Nicola Ranieri<sup>1</sup>.

1 - ENEA, Italian National Agency for New Technologies, Energy and Sustainable Economic Development (Italy)

2 - ITALIAN PERSONAL DRONES, Roma (Italy)

3 - SO.G.I.N. S.p.A., Società Gestione Impianti Nucleari S.p.A. (Italy)

**(T.S.4.7) UNDER a BLIND SKY: Rethinking Fire Brigade and Civil Protection CBRNe Resilience in Digitally Denied Environments**

Vincenzo Puccia<sup>1</sup>

1 - Italian National Fire and Rescue Service, Ministry of the Interior, (Italy)

**(T.S.4.8) When Efficiency Becomes Vulnerability: A CER–ISO 22301 Conceptual Framework for CBRNe Hospital Operational Continuity**

Eugenio Pucci<sup>1</sup>

1 - Immunohaematology and Transfusion Medicine Service (SIMT), Castrovillari Hospital, ASP Cosenza, (Italy)

2 - International Master Courses in Protection Against CBRNe Events, University of Rome Tor Vergata, Rome (Italy)

**(T.S.4.9) Maintaining a UAV Communication Chain in a Dangerous Enclosed Cyber-Physical 3D Space**

Leonid Ostapenko<sup>1</sup>, Oleg Illiashenko<sup>2</sup>, Vyacheslav Kharchenko<sup>1</sup>

1 - Department of Cybersecurity and Intelligent Information Technologies, National Aerospace University "Kharkiv Aviation Institute", Kharkiv, (Ukraine)

2 - Cyber Security and Digital Forensics, Cybercrime and Security Innovation Centre, Leeds Beckett University, Leeds, (United Kingdom)

**(T.S.4.10) Towards Resilient MRI Facilities: A Qualitative Threat Assessment and Critical Infrastructure Protection Framework for CBRNe Preparedness**

Thiago M. de Brito Farias<sup>1</sup>, Susana de Souza Lalic<sup>1,2,3</sup>, Francesco d'Errico<sup>3,4</sup>

1 - Department of Diagnostic Imaging, Escola Paulista de Medicina, Universidade Federal de São Paulo-SP, (Brazil)

2 - Department of Physics, Federal University of Sergipe, (Brazil)

3 - School of Engineering, University of Pisa, Italy (Brazil)

4 - School of Public Health, Yale University, and Yale Center for Emergency Preparedness and Disaster Response, New Haven, CT (USA)

**(T.S.4.11) The Soft Underbelly of Hospital Resilience: A CERA-Based Self-Assessment and Capacity-Building Method for Critical Support Services under CBRNe Conditions**

Eugenio Pucci<sup>1</sup>

1 - Servizio di Immunoematologia e Medicina Trasfusionale (SIMT), Castrovillari Hospital, ASP Cosenza, (Italy)

2 - International Master Courses in Protection Against CBRNe Events, University of Rome Tor Vergata, Rome (Italy)

**(T.S.4.12) Cyber CBRNe Risk Scenarios: Digital Safety, Critical Infrastructure Protection, and the Role of Autonomous Aerial Systems**

Genny Dimitrakopoulou<sup>1</sup>

1 - Center for Security Studies (KEMEA), Greece (Greece)

## TECHNICAL SESSION 5 – Training, Education, Psychology & Extended Reality for CBRNe Preparedness

### Chairpersons

- **Col. Ibrahim Almarzouqi** — Director of the Chairman’s Office, Abu Dhabi Civil Defence Authority (United Arab Emirates)
- **Col. Andrea Baglioni** — Commander, 7th Regiment CBRN “Cremona”, Italian Ministry of Defence (Italy)
- **Prof. Maxim Kustov** — National University of Civil Defence of Ukraine (Ukraine)

Training and education are critical for ensuring that personnel perform effectively under the stress and uncertainty of CBRNe operations. This session examines innovative methods that combine cognitive learning, behavioural psychology, and immersive technologies to enhance performance, adaptability, and team coordination. Topics include Virtual, Augmented, and Mixed Reality (VR/AR/MR) simulations, serious games, and competency-based education tailored to diverse professional profiles—from first responders to policy-level decision-makers.

We welcome research on human factors, stress inoculation, and crisis cognition, including how training environments can strengthen psychological readiness and communication within multi-agency teams. Submissions may also address learning analytics, performance evaluation, and the translation of training outcomes into operational effectiveness.

This session bridges pedagogy, psychology, and technology to foster a new generation of adaptive CBRNe professionals capable of maintaining composure, collaboration, and ethical judgment during complex emergencies.

**Keywords.** *Training; Education; Psychology; VR/AR/MR; Serious Games; Human Factors; Behavioural Performance; Competency Frameworks; Stress Inoculation; Risk Awareness.*

**(T.S.5.1) Use of Sensory Immersion Exercises to Support Rescuers or First Responders**

Maksym Kustov<sup>1</sup>, Kerdyvar Valentyn<sup>1</sup>, Platonov Vladyslav<sup>1</sup>, Topchylo Anna<sup>1</sup>, Yevpak Snizhana<sup>1</sup>

*1 - Research Laboratory of Radiation, Chemical and Biological Protection, Educational and Research Institute of Engineering and Special Training, National University of Civil Protection of Ukraine, Professor. (Ukraine)*

**(T.S.5.2) The Invisible Hazard: Psychological Impacts of CBRN Incidents on Firefighters and First Responders. A Model from Abu Dhabi Civil Defence Authority (ADCDA)**

Ibrahim Almarzoqi<sup>1</sup>

*1 - Abu Dhabi Civil Defence Authority ADCDA, Abu Dhabi, (United Arab Emirates)*

**(T.S.5.3) Area Control Centre, Role and Tasks in CBRN Knowledge Management Processes.**

Andrea Baglioni<sup>1</sup>

*1 - 7th Regiment CBRN Cremona, Italian Army (Italy)*

**(T.S.5.4) Beyond the Exercise: The Strategic Value of Integrated CBRNe Exercises for Interagency Coordination and Operational Readiness in Türkiye**

Neslihan Külahlıoğlu<sup>1,2,3</sup>

*1 - Ankara University, Institute of Forensic Sciences, Department of Forensic Toxicology, Ankara, (Türkiye)*

*2 - CBRNE Defense, Health, Technology, and Innovation Research Group, Integrated Technologies Research Center (BUTAM), Ankara University, Ankara (Türkiye)*

*3 - Ankara University, Institute of Forensic Sciences, Department of Criminalistics, Ankara, (Türkiye)*

**(T.S.5.5) The PhD School of Industrial Engineering at the University of Rome Tor Vergata**

Stefano Cordiner<sup>1</sup>

*1 - Department of Industrial Engineering, "Tor Vergata" University of Rome, Via del Politecnico 1, 00133, Rome, (Italy)*

**(T.S.5.6) Simulation-Based Interactive Training as a Tool for Ensuring CBRN Emergency Preparedness**

Maryna Chyrkina-Kharlamova<sup>1</sup>, Nuianzin Vitalii<sup>1</sup>

*1 - Department of Radiation and Chemical Protection at the Educational and Research Institute of Engineering and Specialized Training, National University of Civil Protection of Ukraine (Ukraine)*

**(T.S.5.7) Military Helicopter Training and Real Operations**

Carla Angelucci<sup>1</sup>

*1 - Italian Air Force (Italy)*

**(T.S.5.8) CBRN & Non-Proliferation. A Necessity for Academical Education?**

Patrick Wengler<sup>1</sup>, David Crouch<sup>1</sup>

*1 - Cranfield University (United Kingdom)*

**(T.S.5.9) Between Hope and Apprehension: Systemic Anxiety and Uncertainty in an Uncertain World — Evidence from an Italian Sam**

Nicola Simone<sup>1,2</sup>, Pietro Crescenzo<sup>3</sup>, Antonio Parrilla<sup>4</sup>

1 - CREA Council for Research in Agriculture and Economics / PhD Candidate, Industrial Engineering – XXXVIII Cycle (Italy)

2 - Department of Industrial Engineering University of Rome Tor Vergata - via del Politecnico 1 ROMA (Italy)

3 - Department of Theoretical and Applied Sciences, ECampus University, 22060 Novedrate, (Italy)

4 - Presidency of the Council of Ministers - Italian Republic (Italy)

**(T.S.5.10) Training CBRNe Crisis Communicators under Pressure: Cognitive Bias, Stress and Decision-Making in High-Uncertainty Emergencies**

Antonio Parrilla<sup>1</sup>

1 - Presidency of the Council of Ministers, Department for Sport (Italy)

**(T.S.5.11) Training in the National Fire Brigades Corp**

Maria Pannuti<sup>1</sup>, Lina Di Giamberardino<sup>1</sup>

1 - Department of Firefighters, Public Rescue and Civil Defence, Ministry of Interior, (Italy)

**(T.S.5.12) Enhancing Cross-Border CBRNe Preparedness through European Territorial Cooperation**

Filippo La Vecchia<sup>1</sup>

1 - Italian Prime Ministry Office (Italy)

**(T.S.5.13) Emotional Trauma and Burnout Among Staff Working in Prolonged Emergency and Disaster Settings**

Amer Hosin<sup>1</sup>, Roy Lubit<sup>1</sup>

1 - Traumatic Stress and a Fellow of the Higher Education Academy (UK) (Iraq)

**(T.S.5.14) Medical CBRN Knowledge and Self-Assessment Preparedness Among Students at Gülhane Faculty of Medicine: A Cross-Sectional Study**

Ilker Satiroglu<sup>1,3</sup>, Neslihan Kulahlioglu<sup>2,3,4</sup>

1 - University of Health Sciences, Gülhane Faculty of Medicine, Ankara, (Türkiye)

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4 - Ankara University, Institute of Forensic Sciences, Department of Criminalistics, Ankara, (Türkiye)

## TECHNICAL SESSION 6 – Health, Medical and Biosafety Management in CBRNe Emergencies

### Chairpersons

- **Prof. Vasilis Vasiliou** — Chair of the Department of Environmental Health Sciences at Yale School of Public Health, Yale University (United States of America)
- **Prof. Giuseppe Novelli** — Chair of the Section of Genetics, Department of Biomedicine and Prevention, University of Rome Tor Vergata (Italy)
- **Dr. Giuseppe Bacis** — Director of the Bergamo Poison Control Centre, ASST Papa Giovanni XXIII – Bergamo (Italy)

This session covers the medical, biosafety, and public health dimensions of CBRNe preparedness and response, emphasizing an integrated approach to save lives and protect healthcare infrastructures. Topics include triage and decontamination procedures, medical countermeasures (vaccines, antimicrobials, antidotes, and diagnostics), and management of contaminated casualties. Contributions focusing on hospital resilience, surge capacity, and continuity of essential services during mass-casualty events are encouraged. Studies examining the health impacts of long-term exposure, the role of exposome assessment, and mental health care for responders and victims are also highly relevant.

The session welcomes work on biosafety and biosecurity measures in hospitals, laboratories, and emergency facilities, as well as on early warning systems and surveillance networks for biological, chemical, and radiological incidents. A special focus will be given to cross-sectoral collaboration among medical, public health, and civil protection entities.

**Keywords.** *Medical Countermeasures; Triage; Decontamination; Exposome; Hospital Resilience; Biosafety; Biosecurity; Mental Health; Public Health Surveillance; Continuity of Care.*

**(T.S.6.1) Precision Toxicology for CBRN Medical Countermeasures: Genetic and Metabolic Determinants of Individual Susceptibility to Chemical and Radiological Exposure**

Vasilis Vasiliou<sup>1</sup>

1 - Susan Dwight Bliss, Global Environmental Health Sciences and Translational Exposomics, Department of Environmental Health Sciences, Yale School of Public Health, Yale University (USA)

**(T.S.6.2) Epigenomic Memory of Exposure: DNA Methylation Signatures as Retrospective Biodosimeters and Predictors of Delayed Risk after CBRNe Events**

Giuseppe Novelli<sup>1</sup>

1 - Department of Biomedicine and Prevention, School of Medicine and Surgery, University of Rome Tor Vergata (Italy)

**(T.S.6.3) CBRNe and Hazmat Disasters – Planning and Training**

Giuseppe Bacis<sup>1</sup>, M. Gallo<sup>1</sup>

1 - Bergamo Poison Control Center, ASST Papa Giovanni XXIII, Bergamo, Italy (Italy)

**(T.S.6.4) Medical Management of Radiological and Nuclear Emergencies**

Francesco Garaci<sup>1</sup>

1 - Department of Biomedicine and Prevention, University of Rome Tor Vergata (Italy)

**(T.S.6.5) Efficacy of RSDL® (Reactive Skin Decontamination Lotion Kit) against Novichok Nerve Agents**

Laura Cochrane<sup>1</sup>, Alex S Cornelissen<sup>2</sup>, Roland M van den Berg<sup>2</sup>, Jan P. Langenberg<sup>2</sup>, Marco van Grol<sup>2</sup>

1 - SERB Pharmaceuticals, Paris, France (France)

2 - TNO Defence, Safety and Security, CBRN Protection, Rijswijk, (Netherlands)

**(T.S.6.6) Fondazione Biotechnopolo di Siena: Transforming Research into Strategic Capability for Health Security and Biological Preparedness - G. Polifrone**

Gianluca Polifrone<sup>1</sup>

1 - Fondazione Biotechnopolo di Siena (Italy)

**(T.S.6.7) Strengthening CBRN preparedness today and tomorrow: how a Trusted Pharmaceutical Partner can support readiness**

Silvia Muccioli<sup>1</sup>, Riccardo Graziani<sup>1</sup>, Stefano Pulcini<sup>1</sup>, Leonardo Calzetti<sup>1</sup>

1 - SERB Pharmaceuticals (France)

**(T.S.6.8) The importance of medical countermeasures in nuclear or radiological public health emergencies**

Marta Slimak-Mastrobuoni<sup>1</sup>

1 - HEYL Chem.-pharm. Fabrik GmbH & Co. KG, Berlin, (Germany)

**(T.S.6.9) Closing the ricin poisoning treatment gap: preparedness implications of a specific polyclonal F(ab')<sub>2</sub> antitoxin**

Grégory Vernier<sup>1</sup>

1 - Fabentech (France)

**(T.S.6.10) From detection to analysis and development, the R-2024 as a response for innovative defence's MCMs needs: focus on toxins' diagnostic and treatment, on field devices for detection and diagnostic, data processing and interpretation approach for biomarkers B, approach of the wounds B management system, and development of a BChE bioscavenger.**

Lou Pinchon Carron de la Carrière<sup>1</sup>, Fanny Caputo<sup>1</sup>, Christophe Junot<sup>1</sup>

*1 - Department of Drugs and Technologies for Health (DMTS), University of Paris Saclay, CEA, INRAE, 91191 Gif-sur-Yvette, France. (France)*

**(T.S.6.11) Device-Associated Healthcare-Associated Infections as a Biosafety Vulnerability in CBRNe-Relevant Medical Preparedness**

Mariagrazia Cicala<sup>1</sup>, Mariachiara Carestia<sup>1</sup>, Leonardo Emberti Gialloreti<sup>1</sup>, Fausto Ciccacci<sup>1</sup>, Daniele Di Giovanni<sup>1</sup>, Stefania Moramarco<sup>1</sup>, Stefano Orlando<sup>1</sup>

*1 - Department of Biomedicine and Prevention, University of Rome Tor Vergata, Italy (Italy)*

**(T.S.6.12) Dual Burden of Acute Pesticide Poisoning in Serbia (2020–2024): Occupational Exposure and Intentional Self-Poisoning in the Context of CBRNE Preparedness**

Biljana Koturevic<sup>1</sup>, Natasa Perkovic Vukcevic<sup>2,3</sup>, Snezana Djordjevic<sup>2,3</sup>

*1 - Faculty of Forensic Sciences and Engineering, University of Criminal Investigation and Police Studies, Belgrade, Serbia (Serbia)*

*2 - National Poison Control Centre, Military Medical Academy, Belgrade (Serbia)*

*3 - Faculty of Medicine Military Medical Academy, University of Defence, Belgrade, (Serbia)*

**(T.S.6.13) Shielding Europe: Accelerating the development of CBRN Medical Countermeasures Through the RESILIENCE FPA**

Ileana Akricchi<sup>1</sup>, Fanny Caputo<sup>1</sup>, Loli Chibko<sup>1</sup>, Randa El Fekih<sup>1</sup>, Teo Géraudie<sup>1</sup>, Christophe Junot<sup>1</sup>, Renaud Laffourcade<sup>1</sup>, Isabelle Philippe<sup>1</sup>, Lou Pinchon Carron de la Carrière<sup>1</sup>, Yannick Saintigny<sup>1</sup>

*1 - CEA - French Alternative Energies and Atomic Energy Commission (France)*

**(T.S.6.14) Resilience-R-2024: SP2 TOXINS: the novel approaches to biotoxin threats and the development of innovative medical countermeasures at the European level.**

Lou Pinchon Carron de la Carrière<sup>3</sup>, Stéphanie Simon<sup>3</sup>, Fanny Caputo<sup>3</sup>, Fabrizio Anniballi<sup>1</sup>, Arnaud Avril<sup>2</sup>, François Becher<sup>3</sup>, Laurent Bellanger<sup>3</sup>, Alexandre Caumon<sup>3</sup>, Julie Dano<sup>3</sup>, Hugo Dorison<sup>3</sup>, Brigitte Dorner<sup>4</sup>, Marine Dumas<sup>7</sup>, Donyia El Akrouti<sup>7</sup>, Raphaël Guérois<sup>5</sup>, Marie Hautière<sup>3</sup>, Jasmin Huber<sup>6</sup>, Ylane Idir<sup>3</sup>, Christophe Junot<sup>3</sup>, Camille Kropp<sup>3</sup>, Marie Ley<sup>3</sup>, Julie Linussio<sup>8</sup>, Hervé Nozach<sup>3</sup>, Johannes R. Peham<sup>6</sup>, Hans-Werner Mages<sup>4</sup>, Karla Perez-Toralla<sup>3</sup>, Anselme L. Perrier<sup>7</sup>, Audrey Rouaix<sup>3</sup>, Martin Skiba<sup>4</sup>, Daniel Stern<sup>4</sup>, François Thénier<sup>5</sup>, Marilène Trancart<sup>3</sup>, Tom Van Nieuwenhuysen<sup>8</sup>, Cécile Vincent<sup>3</sup>, Baptiste Vivès<sup>3</sup>, Hervé Volland<sup>3</sup>, Laura-Varenne Wilk<sup>4</sup>, Sylvia Worbs<sup>4</sup>

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5 - Université Paris-Saclay, Commissariat à l'Energie Atomique, CNRS, Institute for Integrative Biology of the Cell, Gif-sur-Yvette 91198, France. (France)

6 - AIT Austrian Institute of Technology, Center for Health and Bioresources, Competence Unit Molecular Diagnostics, Giefinggasse 4, 1210 Wien, Austria (Austria)

7 - Université Paris-Saclay, CEA, Molecular Imaging Research Center, Fontenay-aux-Roses, France (France)

8 - Foodborne pathogens service, Sciensano, Brussels, Belgium (Belgium)

**(T.S.6.15) Acute Malathion Poisoning: A Case Study of LC-MS/MS-Based Exposure Confirmation and Toxicological Monitoring**

Biljana Koturevic<sup>1</sup>, Gordana Brajkovic<sup>2</sup>, Snezana Djordjevic<sup>2,3</sup>

1 - Faculty of Forensic Sciences and Engineering, University of Criminal Investigation and Police Studies, Belgrade (Serbia)

2 - National Poison Control Centre, Military Medical Academy, Belgrade (Serbia)

3 - Faculty of Medicine Military Medical Academy, University of Defence, Belgrade, (Serbia)

**(T.S.6.16) Strategic Health Sovereignty and Biomedical Deterrence: the Military Chemical Pharmaceutical Plant as a Dual-Use Asset for CBRNe Resilience**

Arcangelo Moro<sup>1</sup>

1 - Military Chemical-Pharmaceutical Plant - SCFM, Agenzia industria e Difesa (Italy)

**(T.S.6.17) Assessing the Impact of Environmental Conditions on COVID-19 Spread with Nonlinear Autoregressive Models**

Andrea Murari<sup>1,2</sup>, A. Allhverdi<sup>3</sup>, S. Akbarzadeh<sup>3</sup>, M. Gelfusa<sup>3</sup>

1 - Consorzio RFX (CNR, ENEA, INFN, University of Padova, Acciaierie Venete SpA), Padova, Italy (Italy)

2 - Istituto per la Scienza e la Tecnologia dei Plasmi, CNR, Padova, Italy (Italy)

3 - Department of Industrial Engineering, University of Rome "Tor Vergata" (Italy)

**(T.S.6.18) Medical countermeasures for chemicals used as warfare, criminal, or terrorist agents: an overview**

Mariapina Gallo<sup>1</sup>, Giuseppe Bacis<sup>1</sup>

1 - Bergamo Poison Control Center, ASST Papa Giovanni XXIII Hospital, Bergamo (Italy)

**(T.S.6.19) CBRN-e threats and emergencies at sea**

Cesare Fanton<sup>1</sup>

1 - Italian Navy (Italy)

**(T.S.6.20) Military Health Diplomacy: Transforming Healthcare into Strategic Cooperation**

Livia Cenci<sup>1</sup>, Marco Lastilla<sup>1</sup>, Marco Prisco<sup>1</sup>, Emanuele Garzia<sup>1</sup>

1 - Italian Air Force, Ministry of Defence (Italy)

**(T.S.6.21) A Unifying One Health Framework to Evaluate, Manage and Communicate Arboviral Risk through GIS-Based Iso-Risk Surfaces**

Riccardo Melandri<sup>1</sup>, Mariachiara Carestia<sup>2</sup>, Daniele Di Giovanni<sup>2</sup>, Alessio Abbondanzieri<sup>3</sup>

1 - Sapienza University of Rome, Rome, (Italy)

2 - Department of Biomedicine and Prevention, University of Rome Tor Vergata, Rome, Italy (Italy)

3 - Local Health Authority Roma 5 (ASL Roma 5), Department of Prevention, Hygiene and Public Health Service (SISP), Tivoli, Italy (Italy)

**(T.S.6.22) Fatal hydrogen sulfide poisoning: the critical role of integrated prehospital CBRNe response**

Mariapina Gallo<sup>1</sup>, A. Francione<sup>2</sup>, G. Bacis<sup>1</sup>

1 - Bergamo Poison Center, ASST Papa Giovanni XXIII Hospital, Bergamo, Italy (Italy)

2 - School of Anesthesiology and Intensive care, University of Brescia (Italy)

**(T.S.6.23) Thermal strain during simulated battlefield medical tasks in heat while wearing a CBRN respirator: an observational study**

Koen Levels<sup>1</sup>, Elfriede Thiessens<sup>2</sup>

1 - Dutch Ministry of Defense, Department of Training Medicine and Training Physiology (TGTF), (The Netherlands)

2 - Emergency Department Gelre Hospitals, (The Netherlands)

**(T.S.6.24) CBRN-e events and resilient health response**

Cesare Fanton<sup>1</sup>

1 - Italian Navy, Ministry of Defence (Italy)

**(T.S.6.25) HeRMES: A Helmet for Risk Mitigation in Emergency Scenarios**

Santi Tedesco<sup>1</sup>, Maurizio Marrale<sup>2,3</sup>, Francesco d'Errico<sup>4,5,6</sup>

1 - Università Degli Studi di Palermo, Italy; Ceo Automacube. (Italy)

2 - Dipartimento di Fisica e Chimica "Emilio Segrè" (DIFC), Università Degli Studi di Palermo (Italy)

3 - Istituto Nazionale di Fisica Nucleare (INFN), Catania Division, Catania (Italy)

4 - School of Engineering, University of Pisa, (Italy)

5 - School of Public Health, Yale University (USA)

6 - Yale Center for Emergency Preparedness and Disaster Response, New Haven, CT, (USA)

**(T.S.6.26) Italy's Demographic Emergency: Declining Fertility as a National Public Health Priority**

Susanna Ferrero<sup>1</sup>

1 - Clinica Dr. Susanna Ferrero (Italy)

**(T.S.6.27) Spectroscopic characterization of radiation-induced biochemical damage in Escherichia coli by FTIR-ATR under chronic low-dose gamma exposure**

Ricardo Felipe Soares<sup>1</sup>, Lourenço Cattani<sup>1</sup>, Paulo Sérgio de Abreu Junior<sup>1</sup>, Juliana Ferreira-Stirixino<sup>3</sup>, Lucas Ferreira Lyra<sup>3</sup>, Camila Monteiro Santos Marques<sup>3</sup>, Cláudio Antônio Federico<sup>2</sup>, Liana Kalckzuk<sup>1</sup>, Priscila Correia Fernandes<sup>1</sup>

1 - Bioengineering Laboratory, Aeronautics Institute of Technology (LabBio/ITA), Department of Aerospace Science and Technology, São José dos Campos, SP, Brazil (Brazil)

2 - Ionizing Radiation Laboratory, Advanced Studies Institute (LRI/IEAV), Department of Aerospace Science and Technology, São José dos Campos, SP, (Brazil)

3 - PhotoBioS Lab - Research and Development Institute, University of Vale do Paraíba (UNIVAP), São José dos Campos, SP, (Brazil)

**(T.S.6.28) Green-Synthesized Bioactive Hydrogel Based on Pistacia terebinthus Extract / ZnO Nanoparticles / Aloe vera for Decontamination and Wound Management in CBRN-E Incidents**

Deniz Sude Can<sup>1</sup>, Ilker Satiroglu<sup>2</sup>, Neslihan Kulahlioglu<sup>3,4,5</sup>

1 - Yildiz Technical University, Faculty of Chemistry and Metallurgy, Bioengineering Department, Istanbul, (Türkiye)

2 - Gulhane Faculty of Medicine, University of Health Sciences, Ankara, (Türkiye)

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4 - Integrated Technologies Research Center (BUTAM), Ankara University, Ankara, (Türkiye)

5 - Ankara University, Institute of Forensic Sciences, Department of Criminalistics, Ankara, (Türkiye)

**(T.S.6.29) Sulfur Mustard Exposure in Modern Conflict: Clinical and Operational Lessons from Syrian Chemical Casualties**

Levent Kenar<sup>1</sup>

1 - University of Hacettepe (Turkey)

## TECHNICAL SESSION 7 – Risk Modelling, Simulation & Quantitative Assessment Tools for CBRNe Scenarios

### Chairpersons

- **Prof. Lorenzo Brualla** — Spanish National Research Council (CSIC) (Spain)
- **Lt. Col. Filippo Maimone** — Medical Intelligence Office, Italian Ministry of Defence (Italy)
- **Dr. Carlo Rusconi** — SOGIN (Italy)

Quantitative modelling and simulation are essential for anticipating, analysing, and mitigating CBRNe incidents. This session focuses on computational, physical, and probabilistic approaches that enable accurate prediction of dispersion, contamination, exposure, and health outcomes. Topics include Computational Fluid Dynamics (CFD), Gaussian plume and puff models, stochastic and AI-assisted simulations, and real-time data assimilation from sensors, UAVs, or satellites.

Submissions exploring dose–response assessment, multi-scale modelling, and uncertainty quantification are encouraged, as well as those describing field validation campaigns, benchmarking exercises, and interoperability with Decision Support Systems (DSS). The session also addresses the use of digital twin environments and immersive visualization tools for planning and training.

This track serves as a bridge between fundamental research and practical application, demonstrating how advanced models contribute to preparedness, operational decision-making, and resilience building across all CBRNe domains.

**Keywords.** *Modelling; Simulation; CFD; Dispersion Models; Data Assimilation; Probabilistic Analysis; Uncertainty Quantification; Digital Twins; DSS; Predictive Analytics.*

### **(T.S.7.1) Monte Carlo method for optimizing triage in mass casualty events**

Lorenzo Brualla<sup>1,2,3</sup> and Tobias Schwerdtfeger<sup>3</sup>

1 - IFIC, CSIC-UV, Valencia, Spain (Spain)

2 - Westdeutsches Protonentherapiezentrum Essen, Essen, Germany (Germany)

3 - Medicine Faculty, University Duisburg-Essen, Essen, Germany (Germany)

### **(T.S.7.2) Modeling & Simulation in Medical Intelligence (Part 1)**

Vinicio Pelino<sup>1</sup> and Filippo Maimone<sup>1</sup>

1 - Centro Intel, Ufficio MEDINT, Stato Maggiore della Difesa (Italy)

### **(T.S.7.3) Modeling & Simulation in Medical Intelligence (Part 2)**

Vinicio Pelino<sup>1</sup> And Filippo Maimone<sup>1</sup>

1 - Centro Intel, Ufficio MEDINT, Stato Maggiore della Difesa (Italy)

### **(T.S.7.4) Real-World Incident Analysis for Frontline Medical Countermeasure Planning**

David Crouch<sup>1</sup>, Trevor Ringrose<sup>1</sup>, Ken McNaught<sup>1</sup>, Laura Cochrane<sup>2</sup>

1 - Cranfield University at Shrivenham, Defence Academy of the United Kingdom, Wellington Hall Room 189, Shrivenham, Swindon SN6 8LA (United Kingdom)

2 - SERB Pharmaceuticals, Paris, France (France)

### **(T.S.7.5) Probabilistic Evaluation of PAH-Related Cancer Risk in Urban, Industrial, and Rural Schools of Serbia Using Hierarchical Two-Dimensional Monte Carlo Simulation**

Marija Živković<sup>1</sup>, Rastko Jovanović<sup>1</sup>, Ivan Lazović<sup>1</sup>, Milan Protić<sup>2</sup>, Jelena Mičev<sup>1</sup>, Gvozden Tasić<sup>1</sup>, Ana Cumbo<sup>1</sup>

1 - Vinča Institute of Nuclear Sciences, National Institute of Republic of Serbia, University of Belgrade (Serbia)

2 - Faculty of Occupational Safety, University of Niš, Niš (Serbia)

### **(T.S.7.6) Computational Decision Support Systems in CBRN Security: DFT and Trigger-Bond Analysis of an Energetic Nitramine Compound**

Habibe Sen<sup>1</sup>, Rumeysa Yanbakan<sup>1</sup>, Mevlut Eren Polat<sup>1</sup>, Nehir Caliskan<sup>1</sup>, Neslihan Külahlıoğlu<sup>2,3,4</sup>

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3 - Integrated Technologies Research Center (BUTAM), Ankara University, Ankara, Türkiye (Türkiye)

4 - Ankara University, Institute of Forensic Sciences, Department of Criminalistics, Ankara, Türkiye (Türkiye)

### **(T.S.7.7) Comparative Assessment of HotSpot and RASCAL for Rapid Radiological Consequence Analysis Following a Wartime Attack on a VVER-1000 Nuclear Power Plant**

Luca Romano<sup>1</sup>, Andrea Malizia<sup>2,3</sup>, Gian Marco Lodovici<sup>2,3</sup>

1 - Department of Industrial Engineering, University of Rome Tor Vergata, Rome (Italy)

2 - Department of Biomedicine and Prevention, Faculty of Medicine and Surgery, University of Rome Tor Vergata (Italy)

3 - Master Internazionali in Protezione da Eventi CBRNe, University of Rome Tor Vergata ([www.cbrgate.com](http://www.cbrgate.com)) (Italy)

### **(T.S.7.8) Estimating the Economic Burden of Biological Threats in Healthcare: A Propensity Score Framework for CBRNe Risk Governance**

Mariagrazia Cicala<sup>1</sup>, Leonardo Emberti Gialloreti<sup>1</sup>, Stefania Moramarco<sup>1</sup>, Daniele Di Giovanni<sup>1</sup>, Stefano Orlando<sup>1</sup>

1 - Department of Biomedicine and Prevention, University of Rome Tor Vergata, Rome (Italy)

**(T.S.7.9) Reynolds' Transport Theorem to Interpret the Urgent Measures Adopted to Deal with the Epidemiological Emergency from COVID-19 and as a Tool in the Emergency Management Cycle.**

Antonio Annecchi<sup>1</sup>

1 - Department of Firefighters, Public Rescue and Civil Defence, Ministry of Interior (Italy)

**(T.S.7.10) A Framework for Evaluating Emergency Response Performance through Residual Risk Minimization in Seveso III Facilities. Case Study: Application to Emergency Response Exercises Conducted in Seveso III Facilities in Friuli - Venezia Giulia (2025).**

Salvatore Biondi<sup>1</sup>, Francesco Pilo<sup>1</sup>

1 - Department of Firefighters, Public Rescue and Civil Defence, Ministry of Interior (Italy)

**(T.S.7.11) Understanding Nuclear Risk Through Castle Bravo: Historical Evidence and Modern Radiological Modeling**

Sabrina Rao<sup>1</sup>, Federico Mancinelli<sup>1</sup>, Alba Iannotti<sup>2,3,4</sup>, Colomba Russo<sup>2,3,4</sup>, Alessandro Puleio<sup>2,3</sup>, Luca Martellucci<sup>2,3</sup>, Gian Marco Ludovici<sup>1,3</sup>, Laura Zambelli<sup>1,3</sup>, Pasquale Gaudio<sup>2,3</sup> & Andrea Malizia<sup>1,3</sup>

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**(T.S.7.12) A Virtual Tokamak for Education, Integrated Simulations and Benchmarking**

Ivan Wyss<sup>1</sup>, Vasiliki Anagnostopoulou<sup>1,2</sup>, Valentina D'Agostino<sup>1,2</sup>, Pasqualino Gaudio<sup>1</sup>, Michela Gelfusa<sup>1</sup>, Simone Kaldas<sup>1</sup>, Andrea Murari<sup>3,4</sup>, Alessandro Puleio<sup>1</sup>, Riccardo Rossi<sup>1</sup>, Novella Rutigliano<sup>1</sup>, Tayyaba Sajid<sup>1</sup>

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3 - Consortium RFX (CNR, ENEA, INFN, University of Padova, Acciaierie Venete SpA) (Italy)

4 - Institute for Plasma Science and Technology, CNR, Padova (Italy)

**(T.S.7.13) A Wartime Radio-Epidemiology Model for Nuclear Power Plant Incidents: Integrating Atmospheric Dispersion with Secondary Contamination Spread Using Open-Source Codes**

Luca Romano<sup>1</sup>, Andrea Malizia<sup>2,3</sup>, Gian Marco Lodovici<sup>2,3</sup>

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**(T.S.7.14) CADRE-OCE and the SHIELD Program: A Data-Centric Model for CBRN Sense-Making.**

Hooker, A.M<sup>1</sup>, Jaatinen, E.<sup>2</sup>, Lee, P.<sup>3</sup>, Johnson, R.<sup>2</sup>, Peynot, T.<sup>2</sup>, Parker, T.<sup>2</sup>, Gubala, A.<sup>4</sup>, Hutchinson, MR.<sup>1</sup>, Kerr, G.<sup>2</sup>, Goldys, E.<sup>4</sup>, Crameri, R.<sup>3</sup>

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4 - Defence Science and Technology Group, Fishermans Bend, Victoria (Australia)

5 - University of New South Wales, Sydney, New South Wales (Australia)

**(T.S.7.15) Development of an Integrated Multi-Parameter Risk Assessment Framework for Aerosol and Radiological Hazards in CBRNe Scenarios**

Mevlut Eren Polat<sup>1</sup>, Nehir Caliskan<sup>1</sup>, Ozge Kaya<sup>2</sup>, Neslihan Kulahlioglu<sup>3,4,5</sup>

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4 - Integrated Technologies Research Center (BUTAM), Ankara University, Ankara (Türkiye)

5 - Ankara University, Institute of Forensic Sciences, Department of Criminalistics, Ankara (Türkiye)

**(T.S.7.16) Assessing radiation-exposure risks from Galactic Cosmic Rays (GCR) for astronaut safety as humanity prepares for a sustained return to the Moon**

Alessandro Bucci<sup>1</sup>, Pio Ciro Aspetti<sup>1</sup>, Colomba Russo<sup>1</sup>, Andrea Gloria<sup>1</sup>, Luca Romano<sup>1</sup>, Francesco Geri<sup>1</sup>, Laura Mucciarelli<sup>2</sup>, Sabrina Rao<sup>2</sup>, Federico Mancinelli<sup>2</sup> and Andrea Malizia<sup>2</sup>

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**(T.S.7.17) Unloading Operations Following Damage to an LNG Cryogenic Tank at a Roadside Filling Station in the Pontedera (PI) Service Area.**

Elena Pesce<sup>1</sup>, Giuseppe Sifanno<sup>1</sup>, Alessandro Zanetti<sup>1</sup>, Giancarlo Biancotto<sup>1</sup>, Michele Fuser<sup>1</sup>, Antonio Guerra<sup>1</sup>

1 - Department of Firefighters, Public Rescue and Civil Defence, Comando VVF di Venezia (Italy)

**(T.S.7.18) An Uncertainty-Aware Territorial Double-Burden Framework for Quantitative Risk Prioritisation in Complex Emergencies**

Antonino D'Alessandro<sup>1</sup>, Sara Fusi<sup>1</sup>

1 - Istituto Nazionale di Geofisica e Vulcanologia, Osservatorio Nazionale Terremoti, Rome, Italy (Italy)

**(T.S.7.19) Hydrogen Refueling Stations: Scenario Prevention and Management. Large-Scale Experimental Investigation of Hydrogen Jets. First Investigation about Metallic Shield.**

Chiara Vianello<sup>1</sup>, Mattia Carboni<sup>1</sup>, Michele Mazzaro<sup>2</sup>, Paolo Mocellin<sup>1</sup>, Francesco Pilo<sup>3</sup>, Gianmaria Pio<sup>5</sup>, Paola Russo<sup>4</sup>, Ernesto Salzano<sup>5\*</sup>

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4 - Università degli Studi di Roma La Sapienza (Italy)

5 - Department of Civil, Chemical, Environmental and Materials Engineering, University of Bologna (Italy)

**(T.S.7.20) Atmospheric Dispersion and Radiological Risk Assessment of Hypothetical Severe Accidents at Bushehr and Barakah Nuclear Power Plants: A Dual-Scenario Analysis**

Hamed Al-Nabhani<sup>1</sup>, Andrea Malizia<sup>2</sup>, Riccardo Quaranta<sup>2,3</sup>

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3 - National Institute for Nuclear Physics-National Laboratory of Frascati (INFN-LNF), Frascati (Italy)

**(T.S.7.21) A Bilevel Stackelberg Game for Protecting Moving SMR Fuel Convoys: How the Defensive Posture Shifts between Smuggling and Attack Threats**

Fatma Cengiz<sup>1</sup>

1 - Defence Management PhD Programme, National Defence University (Türkiye)

## TECHNICAL SESSION 8 – Radiological & Nuclear Safety, Protection and Technologies

### Chairpersons

- **Prof. Francesco D’Errico** — Full Professor of Nuclear Measurements and Instrumentations, School of Engineering, University of Pisa (Italy)
- **Dr. Luigi De Dominicis** — Dean of the Section for Physical Technologies for Safety and Health (Nuclear Department), ENEA (Italy)
- **Col. Carlos Ardanaz** — Commander of the CBRNe School of Spain (Spain)

This session focuses on scientific, technological, and operational advances in radiological and nuclear (R/N) safety, protection, and measurement. Modern R/N emergencies—ranging from lost sources to deliberate releases—require state-of-the-art detection, mapping, and decision-support capabilities.

Topics include high-resolution spectrometry, dosimetry innovations, unmanned and robotic sensing, and mobile laboratory deployment for rapid radiological assessment. The integration of these technologies with Decision Support Systems (DSS) and Digital Twins to enhance situational awareness is strongly encouraged. Papers may also explore radiation shielding, decontamination processes, radioactive waste management, and environmental remediation, with special emphasis on sustainability and long-term monitoring.

Further themes include cross-border monitoring networks, public risk communication, and community engagement during radiological crises. The session aims to link technological development, operational practice, and policy, supporting enhanced radioprotection and international collaboration in R/N safety.

**Keywords.** *Radiation Detection; Dosimetry; Mobile Labs; Unmanned Sensing; Shielding; Decontamination; Waste Management; Cross-Border Monitoring; Radiation Protection; Environmental Remediation.*

**(T.S.8.1) Safety, Security, Safeguards, Vulnerabilities, and Radiation Protection Considerations for Modular Nuclear Reactors**

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3 - CAEN Sys Italy (Italy)

**(T.S.8.2) The European Commisison contribution to RN safety and security**

Luig De Dominicis<sup>1</sup>

1 - Nuclear Department, ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development (Italy)

**(T.S.8.3) The European Leap Forward In CBRN Defense.**

Carlos Ardanaz<sup>1</sup>

CBRN Defence School, Spanish Ministry of Defence (Spain)

**(T.S.8.4) Risk Mitigation through a National Radiological Survey in Iraq to Locate and Recover Orphan Sources**

Faez Qahtan Waheed<sup>1</sup>

Research and Development Directorate/ I-NRC, Iraqi NFP for EU CBRN CoE, Baghdad (Iraq)

**(T.S.8.5) Preparedness and response in a RDD scenario: from the emergency management to the medical treatment of the victims**

Roberta Corrao<sup>1</sup>, Andrea Malizia<sup>2</sup>, Mariapina Gallo<sup>3</sup>, Giuseppe Bacis<sup>3</sup>, Francesco D'Errico<sup>4,5</sup>

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5 - Yale School of Public Health and Center for Emergency Preparedness and Disaster Response, New Haven, CT (USA)

**(T.S.8.6) Development and Validation of the THYMON Portable Thyroid Monitoring System for CBRNe Emergency Response**

Gabriele Zorloni<sup>1</sup>, Giuliano Mini<sup>1</sup>, Olli-Pekka Rauhala<sup>2</sup>, Maarit Muikku<sup>2</sup>, Valtteri Suorsa<sup>2</sup>, Maria Antonia López<sup>3</sup>, Juan Francisco Navarro<sup>3</sup>, Begoña Pérez López<sup>3</sup>

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2 - Radiation and Nuclear Safety Authority, STUK, Vantaa (Finland)

3 - Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas, CIEMAT, Madrid (Spain)

**(T.S.8.7) Development and Characterization of a SiPM-Coupled Scintillators Detection System for Unmanned Ground Vehicles (UGV) using Low-Cost Components**

Pio Ciro Aspetti<sup>1</sup>, Alessandro Bucci<sup>1</sup>, Colomba Russo<sup>1,3</sup>, Riccardo Quaranta<sup>2,3,4</sup> and Andrea Malizia<sup>2,3</sup>

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**(T.S.8.8) Radiological Protection in Warfare Scenarios: Beyond the Civilian Paradigm**

Alessandro Rizzo<sup>1</sup>, Enrico Borra<sup>1</sup>, Andrea Malizia<sup>2</sup>, Silvio Mastrolitti<sup>1</sup>, Ignazio Vilardi<sup>1</sup>

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**(T.S.8.9) The GAMON platform: an integrated solution for environmental and marine radioactivity monitoring**

Giacomo Magiagalli<sup>1</sup>, Massimo Morichi<sup>1</sup>, Paola Garosi, Erica Fanchini, Carlo Uguccioni, Fabio Davolio<sup>1</sup>

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**(T.S.8.10) Sustainable nuclear energy and national energy security: the role of small modular reactors in infrastructure resilience and hybrid threats**

Francesco Geri<sup>1</sup>, Andrea Gloria<sup>1</sup>, Alessandro Bucci<sup>1</sup>, Federico Mancinelli<sup>2</sup>, Sabrina Rao<sup>2</sup>, Francesco d'Errico<sup>3</sup>, Andrea Malizia<sup>2</sup>

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3 - Department of Civil and Industrial Engineering, University of Pisa, Pisa (Italy)

**(T.S.8.11) Nuclear fusion power generation, RN threats. Application of the BRAM method on a hypothetical reconversion of the Montalto di Castro power plant in 2050**

Carbonelli Marco<sup>1</sup>, Geri Francesco<sup>2</sup>, Giomini Flavio<sup>2</sup>, Malizia Andrea<sup>3</sup>

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**(T.S.8.12) SkyON": A Software Tool for 3D Radiological Mapping with Unmanned Aerial Measurements including Artificial Intelligence**

David Archila<sup>1</sup>, Pablo Royo<sup>2</sup> and Arturo Vargas<sup>1</sup>

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2 - Castelldefels School of Telecommunications and Aerospace Engineering— Universitat Politècnica de Catalunya (UPC), Castelldefels (Spain)

**(T.S.8.13) Post-Strike Satellite Assessment of Iran's Nuclear Fuel Cycle**

Michael Thornton<sup>1</sup>

1 - Department of Biomedicine and Prevention, Faculty of Medicine and Surgery, University of Rome Tor Vergata, Rome (Italy)

**(T.S.8.14) Innovation of the chain of custody of samples during the On-Site Inspections**

Chiara Telloli<sup>1</sup>, Fabio Borgognoni<sup>1</sup>, Giuseppe Ottaviano<sup>1</sup>, Alberto Ubaldini<sup>1</sup>, Antonietta Rizzo<sup>1</sup>

1 - Nuclear Department (NUC), Methods and Techniques for Nuclear Security, Monitoring and Traceability Section (TNMT), ENEA – Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Bologna (Italy)

**(T.S.8.15) REACT: a competency-based framework for multidisciplinary radiological and CBRNe emergency preparedness**

Susana de Souza Lalic<sup>1,2,3</sup>, Francesco d'Errico<sup>3,4</sup>, Thiago M. de Brito Farias<sup>1</sup>

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**(T.S.8.16) A Single-Chip Embedded Multichannel Analyser for Distributed Neutron and Gamma-Ray Monitoring in the MONREALE Project**

Andrea Chierici<sup>1</sup>, Riccardo Ciolini<sup>1</sup>, Francesco d'Errico<sup>1</sup>

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**(T.S.8.17) Smart Tent for real-time gamma radiation monitoring**

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**(T.S.8.18) Phytoremediation under chronic radiation exposure: mechanistic insights from Helianthus annuus in post-Chernobyl environments**

Gian Marco Ludovici<sup>1,2</sup>, Alba Iannotti<sup>2,3</sup>, Colomba Russo<sup>2,3</sup>, Francesco Gargallo di Castel Lentini<sup>4</sup>, Mostafa Mohammed Atiyah<sup>5</sup>, Sijo Asokan<sup>5</sup>, Simona Maiello<sup>6</sup>, Irene Stilo<sup>6</sup>, Federica Orazzo<sup>2</sup>, Vito Graziano<sup>6</sup>, Saeed Bin Hadher<sup>3</sup>, JohnBaptist Galiwango<sup>7</sup>, Manousos E. Kambouris<sup>8</sup>, Timothy Alexander Mousseau<sup>9</sup>, Andrea Malizia<sup>1,2</sup>

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**(T.S.8.19) The national radioactive fallout detection and alarm network of the Italian Ministry of the Interior: from fallout monitoring in the 1960s to a modern environmental radiological surveillance network**

Angelo Gucciardi<sup>1</sup>

1 - Department of Firefighters, Public Rescue and Civil Defence, Comando di Asti e Comando di Trieste con la collaborazione della Direzione Centrale per la Difesa Civile e le Attività di Protezione Civile - Ufficio di raccordo con le strutture del Corpo (Italy)

**(T.S.8.20) Test of the suitability of the Italian recovery and remediation regulatory framework following a nuclear or radiological emergency through the table-top exercise INEX-6**

Marta Tempra<sup>1</sup>

1 - National Inspectorate for nuclear safety and radiation protection (ISIN) (Italy)

**(T.S.8.21) Evolving nuclear and radiological risk scenarios in the era of distributed SMR and MMR deployment: implications for CBRN preparedness, safeguards and non-proliferation**

M. Morichi<sup>1</sup>, A. Malizia<sup>2</sup>, F. d'Errico<sup>3</sup>

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**(T.S.8.22) HELIRAD: A Spanish Project for the Characterization and Performance Assessment of an Airborne Radiation Measurement and Visualization System for Emergency Response Operations Using EC135 Helicopter**

Arturo Vargas<sup>1</sup>, Pablo Royo<sup>2</sup>, David Archila-Peña<sup>1</sup>, David Garcíab Cirauqui<sup>2</sup>, Jan Viñas<sup>2</sup>

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**(T.S.8.23) Updating thermal neutron libraries and the impact on radiation protection and safety**

Giovanni Romanelli<sup>1</sup>

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**(T.S.8.24) Radiometric laboratories supporting regulatory activities: the integrated analytical capabilities of the Italian National Inspectorate for Nuclear Safety and Radiation Protection (ISIN)**

Leandro Magro<sup>1</sup>, Carlotta Ascenzi<sup>1</sup>, Sara Mariani<sup>1</sup>

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**(T.S.8.25) Advanced cement and glass-ceramic matrices for long-term radioactive waste confinement**

Olena Khrystych<sup>1</sup>, Oksana Savvova<sup>1</sup>

1 - Beketov National University of Urban Economy in Kharkiv, Kharkiv (Ukraine)

**(T.S.8.26) Plant Meristems as Universal Exposimeters of Cumulative Biological Stress**

F. d'Errico<sup>1,2</sup>, T. Butini<sup>3</sup>, F. Barco<sup>1</sup>, S. de Souza Lalic<sup>1,4,5</sup>, A. Malizia<sup>6</sup>, D. Berardi<sup>7</sup>, C. H. Johnson<sup>7</sup>, V. Vasiliou<sup>7</sup>

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**(T.S.8.27) UAS-Based Radiometric Mapping for Radioactive Source Localization**

Di Pietro A.<sup>1</sup>, Caivano G.<sup>1</sup>, Casagrande D.<sup>1</sup>, Cherubini N.<sup>1</sup>, De Dominicis L.<sup>1</sup>, D'Onza F.<sup>1</sup>, Fresilli B.<sup>1</sup>, Gagliardi F.<sup>1</sup>, Gandolfo G.<sup>1</sup>, Gattelli M.<sup>2</sup>, Micelli V.<sup>1</sup>, Morriello I.<sup>1</sup>, Ormando C.<sup>1</sup>, Ranieri N.<sup>1</sup>, Tebano C.<sup>1</sup>, Dubbini M.<sup>2</sup>

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2 - SAL Engineering S.r.l., Russi (RA) (Italy)

**(T.S.8.28) Giving commanders eyes for the medical management of NR situations: radiological assessment systems on the battlefield as a support for decision-making.**

Randa El Fekih<sup>1</sup>, Fanny Caputo<sup>1</sup>, Lou Pinchon-Carron De La Carriere<sup>1</sup>

1 - CEA - French Alternative Energies and Atomic Energy Commission (France)

**(T.S.8.29) Recent Advances in Polymer Composite Materials for Gama-Ray and Neutron Shielding: Toward Lightweight Personal Protective Equipment for Multifunctional CBRN-E Protection**

Berfin Sude Akbiyik<sup>1</sup>, Neslihan Kulahlioglu<sup>2,3,4</sup>

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## TECHNICAL SESSION 9 – Chemical & Explosive Threats: Detection, Protection and Innovation

### Chairpersons

- **Prof. Pasquale Gaudio** — Dean of the Quantum Electronics and Plasma Physics R.G. – Department of Industrial Engineering, University of Rome Tor Vergata (Italy)
- **Dr. Frank Duschek** — German Aerospace Center, Institute of Technical Physics, Head of Department (Germany)
- **Dr. Maria Pina Gallo** — Bergamo Poison Control Centre, ASST Papa Giovanni XXIII – Bergamo (Italy)

Chemical and explosive incidents remain among the most immediate and unpredictable threats in both industrial and terrorist contexts. This session covers advances in the detection, identification, and neutralization of Chemical Agents (CAs), Toxic Industrial Chemicals (TICs), and Explosive Devices (IEDs). We invite papers on analytical and field-deployable detection systems, machine learning-based classification algorithms, and novel protective materials for individual and collective protection (PPE/CPE). Studies on decontamination agents, filtration systems, and engineering applications aimed at mitigating contamination are particularly encouraged.

The session also seeks insights from explosives safety, blast modelling, and counter-IED integration into CBRNe operations, highlighting joint response strategies between EOD units and first responders. Environmental monitoring, remediation after chemical incidents, and lifecycle safety management are also key topics.

The objective is to showcase how research, technology, and field expertise converge to enhance safety, resilience, and response capability in chemical and explosive domains.

**Keywords.** *Chemical Agents; TICs; Explosives; IEDs; Detection; Decontamination; PPE/CPE; Counter-IED; Engineering Innovation; Environmental Safety.*

**(T.S.9.1) Advances in active chemical stand-off detection technologies for defence and security applications: current status and future trends**

Pasquale Gaudio<sup>1</sup>

1 - Department of Industrial Engineering, University of Rome Tor Vergata, Roma (Italy)

**(T.S.9.2) Development of standoff and robotic CBRN detection: a strategic necessity**

Frank Duschek<sup>1</sup>

1 - German Aerospace Center (DLR), Institute of Technical Physics, Hardthausen (Germany)

**(T.S.9.3) Bergamo Poison Center in promoting awareness and readiness for emergency responses to CBRNe events**

M. Gallo<sup>1</sup>, V. Giordano<sup>2</sup>, N. Erriu<sup>2</sup>, V. Oberti<sup>2</sup>, N. Rubino<sup>2</sup>, D. Marino<sup>3</sup>, O. Valoti<sup>4</sup>, D. Baldelli<sup>4</sup>, L. Daleffe<sup>5</sup>, R. Colombi<sup>6</sup>, R. Cosentini<sup>6</sup>, G. Bacis<sup>1</sup>

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2 - Bergamo Fire Brigade (Italy)

3 - Prefecture of Bergamo, Civil Protection, Civil Defence and public coordination (Italy)

4 - Lombardia emergency medical service AREU (Italy)

5 - DAPSS Risk Management, ASST Papa Giovanni XXIII Hospital, Bergamo (Italy)

6 - Emergency Department, ASST Papa Giovanni XXIII Hospital, Bergamo (Italy)

**(T.S.9.4) RapID: Rapid identification of explosive properties of unknown substances with a new portable system**

Philip Baumgart<sup>1</sup>, Daniel Röthgen<sup>1</sup>, Matthias Muhr<sup>1</sup>, Christopher Becher<sup>1</sup>, Peter Kaul<sup>1</sup>

1 - Institute for Safety and Security Research, Bonn-Rhein-Sieg University of Applied Sciences (Germany)

**(T.S.9.5) Substrate-invariant spectral data analysis for explosive detection using vibrational spectroscopy**

Shrawani Bhoyar<sup>1</sup>, Lisa B. Dreier<sup>1</sup>, Anja Köhntopp<sup>1</sup>

1 - German Aerospace Center, Institute of Technical Physics, Hardthausen (Germany)

**(T.S.9.6) Integrated strategies for rapid toxic industrial chemical detection and first responder safety in urban CBRNe emergencies**

Olga Bjelica<sup>1</sup>, Iva Beronja<sup>1</sup>, Kristina Čugurović<sup>1</sup>, Anastasija Baćina<sup>1</sup>

1 - University of Criminal Investigation and Police Studies, Faculty of Forensic Sciences and Engineering, Belgrade (Serbia)

**(T.S.9.7) Swatch-level wind tunnel testing of protective clothing against chemical warfare agents (HD, GD) under field-relevant transport conditions**

Hyunseo Choi<sup>1</sup>, Jiwoong Heo<sup>1</sup>, Heesoo Jung<sup>1</sup>, Hyunsook Jung<sup>1</sup>

1 - Agency for Defense Development, 3rd R&D Institute - 5th Directorate (South Korea)

**(T.S.9.8) Medical countermeasures and the WHO essential medicines list: global reference mechanism for national adoption for chemical preparedness: Cyanokit a case study**

Basile Gorin<sup>1</sup>, Stefano Pulcini<sup>1</sup>, Laura Cochrane<sup>1</sup>

1 - SERB Pharmaceuticals, Paris (France)

**(T.S.9.9) Blood-Brain Barrier passage, a "no brainer" for new antidotes against organophosphorus poisoning**

Keven Mardy<sup>1</sup>, José Dias<sup>2</sup>, Xavier Frapaise<sup>3</sup>, C. Landry<sup>4</sup>, Florian Nachon<sup>2</sup>, M.-P. Dehouck<sup>4</sup>, Rachid Baati<sup>1</sup>

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4 - Université d'Artois, LBHE, Lens (France)

**(T.S.9.10) Angle dependent stand-off Raman spectroscopy on chemical warfare agent simulants**

Anastasia Strocenco<sup>1</sup>, Patrick Di Martino-Fumo<sup>1</sup>, Lisa B. Dreier<sup>1</sup>, Frank Duschek<sup>1</sup>

1 - German Aerospace Center (DLR), Institute of Technical Physics, Hardthausen (Germany)

**(T.S.9.11) In-situ generated active chlorine particles as an alternative to conventional decontamination materials**

Stevan Stupar<sup>1</sup>, Nemanja Vučković<sup>1</sup>, Jelena Dikić<sup>2</sup>, Milan Tanić<sup>3</sup>, Dušan Mijin<sup>4</sup>

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3 - The Academy of Applied Preschool Teaching and Health Studies, Department of Technical and Technological Studies Kruševac, Kruševac (Serbia)

4 - University of Belgrade, Faculty of Technology and Metallurgy, Belgrade (Serbia)

**(T.S.9.12) Adapting to Tomorrow's CBRNE Threats: Advances in Portable Identification and Analysis**

Jeremy VanAuker<sup>1</sup>, Emily Chaffee<sup>1</sup>, Dave Godin<sup>1</sup>

1 - 908 Devices: Chemical Analysis devices (USA)

**(T.S.9.13) Aerial-, aquatic-, and terrestrial-based Raman systems for the identification of chemical and explosive threats**

Viehweger, Kai Henning<sup>1</sup>, Ray Bryan H.<sup>2</sup>

1 - Metrohm AG (Switzerland)

2 - Metrohm Spectro (USA)

**(T.S.9.14) Preparedness and response to an emergency scenario in a major-accident hazard establishment**

R. Corrao<sup>1</sup>, A. Malizia<sup>2</sup>, F. Vitale<sup>1</sup>, M. Mansour<sup>1</sup>, A. Castani<sup>1</sup>, P. Bulgheroni<sup>1</sup>, F. D'Errico<sup>3,4</sup>, F. Geri<sup>5</sup>

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**(T.S.9.15) Identification of CBRNe agents using handheld Raman spectroscopy**

Valerian Ciobota<sup>1</sup>

1 - Rigaku (USA)

**(T.S.9.16) Computational Design and Evaluation of a New Class of Nitroaromatic High-Energy Materials: Sensitivity and Detonation Performance**

Jelena Mičev<sup>1</sup>, Gvozden Tasić<sup>1</sup>, Dušan Veljković<sup>2</sup>, Marija Ječmenica Dučić<sup>1</sup>, Ivan Lazović<sup>1</sup>, Ana Cumbo<sup>1</sup>

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*2 - Faculty of Chemistry, University of Belgrade, Belgrade (Serbia)*

**(T.S.9.17) From Early Warning to Identification: A Two-Stage Detection System for CBRN Threats**

Moritz Michelbach<sup>1</sup>, Arne Walter<sup>1</sup>, Lea Fellner<sup>1</sup>, Frank Duschek<sup>1</sup>, Oliver Kliebisch<sup>2,1</sup>

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*2 - German Aerospace Center, Institute of Technical Physics, Stuttgart (Germany)*

**(T.S.9.18) A Machine-Learning Framework for Forensic Soil Provenance Discrimination: Toward a National Reference Database in Serbia**

Aleksandra Mitrović<sup>1</sup>, Sara Rethas<sup>2</sup>, Jelena Lamovec<sup>1</sup>

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**(T.S.9.19) Experimental Evaluation of DISC Processing Improvements for Biological Aerosol Detection with FALCON 4G**

Silvia Paukovceková<sup>1</sup>, Radovan Kohutiar<sup>1</sup>, Peter Tatar<sup>1</sup>

*1 - Research and Development Department, SEC Technologies, Liptovský Mikuláš (Slovakia)*

**(T.S.9.20) Investigating Novichok incidents: What to sample, where to look, and what remains in the built environment**

Tomas Rozsypal<sup>1</sup>

*1 - Nuclear, Biological and Chemical Defence Institute, University of Defence, Brno (Czech Republic)*

**(T.S.9.21) From the Incident Site to the Mobile Laboratory: Anton Paar's Raman and FTIR Solutions for Rapid Chemical Identification**

Hendrik Schulze<sup>1</sup>

*1 - Anton Paar OptoTec GmbH (Germany)*

**(T.S.9.22) B.M.D.'s approach to remote CBRNe detection using an autonomous unmanned ground platform.**

Giorgio Carcano<sup>1</sup>

*1 - BMD s.p.a (Italy)*

**(T.S.9.23) A method for underwater mine clearance in water areas contaminated with explosive objects**

Kustov Maksym<sup>1</sup>, Hubenko Andrii<sup>2</sup>, Makarov Yevhen<sup>3</sup>, Kulakov Oleg<sup>1</sup>

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**(T.S.9.24) Development of an intelligent hybrid system for personal air exposure monitoring in military deployments**

Emiliano Franci<sup>1</sup>

1 - Centro Tecnico Logistico Interforze NBC (CETLI), Ministry of Defence (Italy)

**(T.S.9.25) Detecting explosives and chemical warfare agents on common surfaces**

Anja Köhntopp<sup>1</sup>, Shrawani Bhoyar<sup>1</sup>, Patrick Di Martino-Fumo<sup>1</sup>, Lisa B. Dreier<sup>1</sup>

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**(T.S.9.26) Deep Learning-Based Harmonization of Multi-Instrument Spectral Data for Generalizable Substance Classification: NARCOSIS Case Study**

Puleio A.<sup>1</sup>, Rossi R.<sup>1</sup>, Gelfusa M.<sup>1</sup>, Gaudio P.<sup>1</sup>

1 - Dep. of Industrial Engineering, University of Rome "Tor Vergata", Rome (Italy)

**(T.S.9.27) Assessing the fit of CBRNe air purifying respirators for medical personnel performing medical tasks in extreme hot and humid environment**

Elfriede Thiessens<sup>1</sup>

1 - Emergency Department Gelre Hospitals (The Netherlands)

**(T.S.9.28) Innovative method for EOR activities for the reclamation of ordnance with presumed chemical charge on the national territory**

Gianmarco Restifo<sup>1</sup>

1 - Centro Tecnico Logistico Interforze CBRN, Italian Ministry of Defence (Italy)

**(T.S.9.29) Chemical & Explosive Threats: Detection, Protection and Innovation — B.M.D. S.p.A.**

Giorgio Carcano<sup>1</sup>

1 - BMD s.p.a (Italy)

**(T.S.9.30) Detection and Classification of Cannabinoids through SWIR Hyperspectral Imaging and Machine Learning**

Denise Gregucci<sup>1,2</sup>, Florinda Artuso<sup>1</sup>, Giuliano Iacobellis<sup>3</sup>, Francesco Colao<sup>1</sup>, Marcello Nuvoli<sup>1</sup>,

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3 - Reparto Ricerca e Sviluppo RACIS Roma (Italy)

**(T.S.9.31) Detection of explosives and flammables in traces by laser induced acoustic signal**

Violeta Lazic<sup>1</sup>, Fabrizio Andreoli<sup>1</sup>, Marco Pistilli<sup>1</sup>, Ivano Menicucci<sup>1</sup>, Roberto Chirico<sup>1</sup>, Marco Rao<sup>1</sup>, Biljana Stankov<sup>2</sup>, Christian Ulrich<sup>3</sup>, Frank Schnürer<sup>3</sup>, Pasqualino Gaudio<sup>4</sup>

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4 - Department of Industrial Engineering, University of Rome Tor Vergata, Roma (Italy)

**(T.S.9.32) Dual-action commercial natural clays for the capture and catalytic degradation of organophosphorus and organosulfur pollutants and CWAs**

Stefano Econdi<sup>1</sup>, Martina Castaldi<sup>2</sup>, Stefano Marchesi<sup>3</sup>, Chiara Bisio<sup>3</sup>, Matteo Guidotti<sup>1</sup>

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3 - DISIT, University of Eastern Piedmont, Alessandria (Italy)

**(T.S.9.33) Multi-scale computational design of MOF-functionalized smart textiles against CWAs for wearable technologies**

Merve Uyanik<sup>1,4</sup>, Berfin Sude Akbiyik<sup>2,4</sup>, Neslihan Kulahlioglu<sup>3,4,5</sup>

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**(T.S.9.34) Structural integrity gaps of firefighter suits and improvement of protection against ingress of combustion products**

Pavel Castulik<sup>1</sup>, Kamila Lunerová<sup>2</sup>, Jakub Vaněk<sup>2</sup>, Lukáš Králík<sup>2</sup>, Jiří Chrastek<sup>3</sup>, Michaela Serakova<sup>4</sup>, Jiri Kozeluh<sup>4</sup>

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4 - GoodPRO, s.r.o., Prestice (Czech Republic)

**(T.S.9.35) Explosive detection using SWIR hyperspectral imaging integrated with chemometric and machine learning techniques**

Martina Franchi<sup>1</sup>, Florinda Artuso<sup>1</sup>, Massimiliano Guarneri<sup>1</sup>, Federico Angelini<sup>1</sup>

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**(T.S.9.36) Mission-Ready CBRN decontamination for rapidly evolving operational environments**

Renato Bonora<sup>1</sup>

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## TECHNICAL SESSION 10 – Biological & Biotechnological Threats in the Synthetic Biology Era

### Chairpersons

- **Prof. Jean-Luc Gala** — UCLouvain – CTMA (Center for Applied Molecular Technologies); Cliniques Universitaires Saint-Luc; B-LiFE Mobile Lab (Belgium)
- **Dr. Eng. Edoardo Cavalieri d'Oro** — Chief CBRN Department of Region Lombardy and P.I. of the EU-funded project RescEU CBRN (Italy)
- **Dr. Daniele Lapa** — Senior Biologist at the National Institute for Infectious Diseases Lazzaro Spallanzani IRCCS (Italy)

The convergence of biotechnology, synthetic biology, and global mobility has amplified biological risks and biosecurity challenges. This session examines emerging pathogens, engineered microorganisms, and biological toxins, as well as frameworks for surveillance, detection, and containment.

Topics include Next-Generation Sequencing (NGS) and metagenomics for pathogen identification, biosurveillance networks, epidemiological modelling, and One Health approaches linking human, animal, and environmental health. The session encourages work on biosafety in high-containment laboratories, waste management, and biological decontamination technologies.

We particularly welcome studies on dual-use governance, regulatory oversight of synthetic biology, and ethical frameworks to manage innovation responsibly. Papers exploring cross-sector collaboration, data sharing, and rapid diagnostic solutions that enhance situational awareness and international health security are strongly encouraged.

**Keywords.** *Synthetic Biology; NGS; Metagenomics; Biosurveillance; One Health; Dual-Use Governance; Biosafety; Waste Management; Biosecurity; Epidemiological Modelling*

**(T.S.10.1) Vaporised Hydrogen Peroxide (VHP) for sustainable reuse of smart respiratory protective equipment: experimental validation, pre-normative assessment and regulatory perspectives**

Jean-Luc Gala<sup>1</sup>

1 - Centre for Applied Molecular Technologies (CTMA), Institute of Clinical and Experimental Research (IREC), UCLouvain, Brussels (Belgium)

**(T.S.10.2) The rescEU Mobile Biological Laboratory: high level biosafety, on-field genomic profiling, and high-throughput analytical capabilities in CBRN maxi-emergencies.**

Edoardo Cavalieri d'Oro<sup>1</sup>, Claudio De Maio<sup>1</sup>

1 - Department of Firefighters, Public Rescue and Civil Defence (Italy)

**(T.S.10.3) Serological evidence of CCHFV circulation in Italy: a first national seroprevalence study in humans and cattle**

Daniele Lapa<sup>1</sup>, Donato Raele<sup>2</sup>, Francesca Rosone<sup>3</sup>, Carlo Vittorio Citterio<sup>4</sup>, Alessandra D'Auria<sup>1</sup>, Federica Iapaolo<sup>5</sup>, Francesca Canavesi<sup>5</sup>, Angela Corpolongo<sup>6</sup>, Emanuele Nicastrì<sup>6</sup>, Fabrizio Maggi<sup>1</sup>, Serena Vita<sup>7</sup>, Guido Di Donato<sup>5</sup>

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3 - Istituto Zooprofilattico Sperimentale del Lazio e della Toscana "M. Aleandri", Rome (Italy)

4 - Istituto Zooprofilattico Sperimentale delle Venezie (IZSVE), Centro Specialistico Fauna Selvatica, SCT2-Belluno, Belluno (Italy)

5 - National Reference Centre for Foreign Animal Diseases (CESME), Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise G. Caporale, Teramo (Italy)

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7 - Ospedale Sant'Andrea, Sapienza University of Rome, Rome (Italy)

**(T.S.10.4) Collatamp® G for local infection prevention and hemostatic support in open wounds during emergency, disaster and conflict settings**

Riccardo Graziani<sup>1</sup>, Silvia Muccioli<sup>1</sup>

1 - SERB Pharmaceuticals, Paris (France)

**(T.S.10.5) From supportive care to a specific antitoxin for ricin poisoning: development of a polyclonal F(ab')<sub>2</sub> immunotherapy**

Sylvain Legrand<sup>1</sup>

1 - Fabentech (France)

**(T.S.10.6) Eye-safe polarization lidar for biosurveillance and aerosol hotspot localization**

S. Zajonz<sup>1</sup>, O. Kliebisch<sup>1</sup>, F. Duschek<sup>1</sup>, M. Michelbach<sup>1</sup>, A. Walter<sup>1</sup>, L. Fellner<sup>1</sup>, T. Dekorsy<sup>1</sup>, S. Schröder<sup>2</sup>, F. Meyer<sup>2</sup>, B. Jacob<sup>2</sup>, Veronique Franzen<sup>2</sup>

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2 - Bundeswehr, Research Institute for Protective Technologies and CBRN Protection, Munster (Germany)

**(T.S.10.7) Evaluation of active plant-derived compounds with therapeutic potential against biothreat agents**

Jean-Marie Zimmer<sup>1</sup>

1 - Corps Grand-Ducal d'incendie et de secours, Groupe d'intervention spécialisé NRBC, Luxembourg (Grand Duchy of Luxembourg)

**(T.S.10.8) Development of an enhanced and customised Multiplex Real-Time PCR assay for rapid detection of high-priority biothreat agents**

Chong Yong<sup>1</sup>, May Ong<sup>1</sup>, Anna Lim<sup>1</sup>, Mamoru Takemura<sup>2</sup>, Mitsuharu Sato<sup>2</sup>, Ang Khay Chun<sup>2</sup>, Goh Yong Jie<sup>2</sup>, Jeberah Kwan<sup>2</sup>, Sarah Oen<sup>2</sup>, Ian Fong<sup>2</sup>, Chua Kok Yong<sup>2</sup>

1 - Home Team Science and Technology Agency, Ministry of Home Affairs, Singapore

2 - Veredus Laboratories Pte Ltd

**(T.S.10.9) Beyond Antibiotics: Therapeutic bacteriophages as a precision tool against multidrug-resistant infections**

Gian Marco Ludovici<sup>1,2</sup>, Alba Iannotti<sup>2,3</sup>, Colomba Russo<sup>2,3</sup>, Francesco Gargallo di Castel Lentini<sup>4</sup>, Mostafa Mohammed Atiyah<sup>5</sup>, Sijo Asokan<sup>5</sup>, Simona Maiello<sup>6</sup>, Irene Stilo<sup>6</sup>, Federica Orazzo<sup>2</sup>, Vito Graziano<sup>6</sup>, Saeed Bin Hadher<sup>3</sup>, JohnBaptist Galiwango<sup>7</sup>, Manousos E. Kambouris<sup>8</sup>, Marta Giovanetti<sup>9,10</sup>, Andrea Malizia<sup>1,2</sup>

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9 - Department of Sciences and Technologies for Sustainable Development and One Health, Campus Bio-Medico University, Rome, Italy

10 - Laboratório de Arbovírus Hemorrágicos, Instituto Oswaldo Cruz, Fundação Oswaldo Cruz, Rio de Janeiro, Brazil

**(T.S.10.10) Environmental surveillance and molecular diagnostics: operational capabilities of the “joint technical logistic NBC Center” biological section in CBRN defense**

Angelo De Domenico<sup>1</sup>

1 - Centro Tecnico Logistico Interforze NBC (CETLI), Ministry of Defence (Italy)

**(T.S.10.11) Mirror bacteria: an emerging biosafety and biosecurity challenge for global health security**

Stef Stienstra<sup>1</sup>

1 - Royal Dutch Navy and Joint NATO CBRN-defense CoE (The Netherlands)

**(T.S.10.12) The dual-use dilemma of avian influenza: from pandemic risk to bioterrorism threat**

Gian Marco Ludovici<sup>1,2</sup>, Alba Iannotti<sup>2,3</sup>, Colomba Russo<sup>2,3</sup>, Francesco Gargallo di Castel Lentini<sup>4</sup>, Mostafa Mohammed Atiyah<sup>5</sup>, Sijo Asokan<sup>5</sup>, Simona Maiello<sup>6</sup>, Irene Stilo<sup>6</sup>, Federica Orazzo<sup>2</sup>, Vito Graziano<sup>6</sup>, Saeed Bin Hadher<sup>3</sup>, JohnBaptist Galiwango<sup>7</sup>, Manousos E. Kambouris<sup>8</sup>, Marta Giovanetti<sup>9,10</sup>, Andrea Malizia<sup>1,2</sup>

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**(T.S.10.13) Next-Generation Bioactive Coatings for CBRN Defense: sustainable antimicrobial nanofibers against emerging biological threats**

C. Ricci<sup>1</sup>, D. Cuffaro<sup>1</sup>, S. Bertini<sup>1</sup>, M. Macchia<sup>1</sup>, M. Digiacomo<sup>1</sup>, G. Batoni<sup>1</sup>, S. Danti<sup>1</sup>

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**(T.S.10.14) Secondary contamination in hospitals: when the safe haven becomes an additional victim**

Rachele Brancaloni<sup>1</sup>, Luca Ragazzoni<sup>2</sup>, Chiara Bisio<sup>3</sup>, Matteo Guidotti<sup>4,5</sup>

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5 - University of Eastern Piedmont, Vercelli (Italy)

**(T.S.10.15) Assessing epidemic risk through population movement pressure and surveillance weakness: a six-pair comparative analysis using open source data**

Kirstin Khonyon<sup>1</sup>

1 - Master CBRNe - Department of Biomedicine and Prevention, University of Rome Tor Vergata, Rome (Italy)

**(T.S.10.16) Operational validation of complementary fluorescence sensing technologies for biological surface contamination assessment**

Jean-Luc Gala<sup>1</sup>, Jean-François Durant<sup>1</sup>

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**(T.S.10.17) Investigating the seroprevalence of Rift-Valley fever virus (RVFV) and Crimea-Congo hemorrhagic fever virus (CCHFV) in migrants arriving in Italy from endemic regions**

Alessandra D'Auria<sup>1</sup>, Daniele Lapa<sup>1</sup>, Maria Anele Romeo<sup>2</sup>, Fernanda Scopelliti<sup>3</sup>, Alessandro Torsello<sup>3</sup>, Fabrizio Maggi<sup>1</sup>, Andrea Cavani<sup>3</sup>

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3 - National Institute for Health, Migration and Poverty (INMP), Rome (Italy)

**(T.S.10.18) Mycoremediation under chronic ionizing radiation: biological mechanisms and limits of melanized fungi**

Gian Marco Ludovici<sup>1,2</sup>, Alba Iannotti<sup>2,3</sup>, Colomba Russo<sup>2,3</sup>, Francesco Gargallo di Castel Lentini<sup>4</sup>, Mostafa Mohammed Atiyah<sup>5</sup>, Sijo Asokan<sup>5</sup>, Simona Maiello<sup>6</sup>, Irene Stilo<sup>6</sup>, Federica Orazzo<sup>2</sup>, Vito Graziano<sup>6</sup>, Saeed Bin Hadher<sup>3</sup>, JohnBaptist Galiwango<sup>7</sup>, Manousos E. Kambouris<sup>8</sup>, Timothy Alexander Mousseau<sup>9</sup>, Andrea Malizia<sup>1,2</sup>

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9 - Department of Biological Sciences, University of South Carolina, Columbia, USA

**(T.S.10.19) Detection of biological weapons simulants based on a compact, remotely operated Laser-Induced-Breakdown Spectroscopy system suitable for operations on unmanned ground vehicles.**

Salvatore Almaviva<sup>1</sup>, Antonia Lai<sup>1</sup>, Alessandra Pasquo<sup>1</sup>, Ilaria Petrignani<sup>1</sup>, Marco Pistilli<sup>1</sup>

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**(T.S.10.20) Beyond safety: toward anticipatory biomedical engineering for dual-use artificial intelligence**

Ricardo L. Armentano<sup>1</sup>, Leandro J. Cymberknop<sup>2</sup>

1 - Department of Biological Engineering, Universidad de la República, CenUR Litoral Norte, Paysandú, Uruguay; Emeritus Professor, Universidad Tecnológica Nacional, Buenos Aires (Argentina)

2 - Centro de Investigación en Ingeniería Biomédica (CIBIO), Universidad Tecnológica Nacional, Buenos Aires (Argentina)

**(T.S.10.21) Giant viruses in the tree of life: molecular complexity and evolutionary implications**

Gian Marco Ludovici<sup>1,2</sup>, Alba Iannotti<sup>2,3</sup>, Colomba Russo<sup>2,3</sup>, Francesco Gargallo di Castel Lentini<sup>4</sup>, Mostafa Mohammed Atiyah<sup>5</sup>, Sijo Asokan<sup>5</sup>, Simona Maiello<sup>6</sup>, Irene Stilo<sup>6</sup>, Federica Orazzo<sup>2</sup>, Vito Graziano<sup>6</sup>, Saeed Bin Hadher<sup>3</sup>, JohnBaptist Galiwango<sup>7</sup>, Manousos E. Kambouris<sup>8</sup>, Marta Giovanetti<sup>9,10</sup>, Andrea Malizia<sup>1,2</sup>

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- 8 - Department of Pharmacy, University of Patras, 26504, Patras, Greece
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- 10 - Laboratório de Arbovírus Hemorrágicos, Instituto Oswaldo Cruz, Fundação Oswaldo Cruz, Rio de Janeiro, Brazil

**(T.S.10.22) Antimicrobial resistance in ESKAPE pathogens: molecular mechanisms, host-pathogen interactions, and environmental reservoirs**

Gian Marco Ludovici<sup>1,2</sup>, Alba Iannotti<sup>2,3</sup>, Colomba Russo<sup>2,3</sup>, Francesco Gargallo di Castel Lentini<sup>4</sup>, Mostafa Mohammed Atiyah<sup>5</sup>, Sijo Asokan<sup>5</sup>, Simona Maiello<sup>6</sup>, Irene Stilo<sup>6</sup>, Federica Orazzo<sup>2</sup>, Vito Graziano<sup>6</sup>, Saeed Bin Hadher<sup>3</sup>, JohnBaptist Galiwango<sup>7</sup>, Manousos E. Kambouris<sup>8</sup>, Marta Giovanetti<sup>9,10</sup>, Andrea Malizia<sup>1,2</sup>

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**(T.S.10.23) Structured emergency management principles for West Nile virus outbreak response in temperate regions**

Gian Marco Ludovici<sup>1,2</sup>, Alba Iannotti<sup>2,3</sup>, Colomba Russo<sup>2,3</sup>, Francesco Gargallo di Castel Lentini<sup>4</sup>, Mostafa Mohammed Atiyah<sup>5</sup>, Sijo Asokan<sup>5</sup>, Simona Maiello<sup>6</sup>, Irene Stilo<sup>6</sup>, Federica Orazzo<sup>2</sup>, Vito Graziano<sup>6</sup>, Saeed Bin Hadher<sup>3</sup>, JohnBaptist Galiwango<sup>7</sup>, Manousos E. Kambouris<sup>8</sup>, Marta Giovanetti<sup>9,10</sup>, Andrea Malizia<sup>1,2</sup>

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**(T.S.10.24) The future of biological weapons: emerging technologies and security implications**

Levent Kenar<sup>1</sup>

- 1 - University of Hacettepe (Türkiye)

## TECHNICAL SESSION 11 – Intelligence, Investigation & Forensic Science in CBRNe Scenarios

### Chairpersons

- **Prof. Ana Branković** — University of Criminal Investigation and Police Studies, Belgrade (Serbia)
- **Col. Alessio Fantera** — Chief of MEDINT Office, Italian Ministry of Defence (Italy)
- **Com. Alan Kearney** — Irish Army Commandant and Defence Technologist, Irish Ministry of Defence (Ireland)

This session focuses on the intersection of intelligence analysis, field investigation, and forensic science within CBRNe events. From early detection to attribution, forensic integrity and data reliability are essential for operational response and legal accountability.

We welcome contributions on crime scene management, evidence collection in contaminated environments, and the preservation of chain-of-custody during transport to accredited or designated laboratories. Studies involving bioforensics, nuclear and chemical forensics, and the integration of AI-driven data analysis for pattern recognition, trace detection, and attribution are particularly relevant. Papers discussing Disaster Victim Identification (DVI), forensic pathology, and inter-agency coordination are encouraged, alongside perspectives on legal admissibility and international dispute resolution. This session aims to harmonize operational, scientific, and judicial practices in CBRNe investigation, ensuring that forensic outcomes are defensible, interoperable, and globally recognized.

**Keywords.** *Intelligence; Investigation; Forensics; Evidence Collection; Chain of Custody; Accredited Labs; Bioforensics; Nuclear Forensics; DVI; AI in Forensics; Legal Admissibility.*

**(T.S.11.1) Beyond the Crime Scene Tape: Operational and Forensic Challenges in CBRNE Investigations**

Ana Branković<sup>1</sup>, Dunja Drakulić<sup>2</sup>, Ana Todorović<sup>2</sup>

1 - Department of Forensic Engineering, Faculty of Forensic Sciences and Engineering, CBRNE Centre of Excellence, University of Criminal Investigation and Police Studies, Belgrade (Serbia)

2 - Department of Molecular Biology and Endocrinology, VINČA Institute of Nuclear Sciences – National Institute of the Republic of Serbia, University of Belgrade, Belgrade (Serbia)

**(T.S.11.2) The Italian Scientific Police: Organization, Quality, Innovation, and Operational Support to Criminal Investigations and Public Order**

Fabiola Mancone<sup>1</sup>

1 - Central Directorate for the Forensic Science Police and the Cyber Security – Forensic Science Police Service, Ministry of Interior, Department of Public Security, Rome (Italy)

**(T.S.11.3) Performance Evaluation of the SNIPER-GN Portable Gamma–Neutron Detection System**

Giacomo Mangiagalli<sup>1</sup>, Massimo Morichi<sup>1</sup>, Paola Garosi<sup>1</sup>, Erica Fanchini<sup>1</sup>, Carlo Uguccioni<sup>1</sup>, Fabio Davolio<sup>1</sup>

1 - CAEN sys (Italy)

**(T.S.11.4) Crime Scene Management in a Contaminated Environment: A Summary of Experiences from the Investigation of Selected CBRNe-Related Incidents in the Slovak Republic.**

Michal Cikhart<sup>1</sup>, Mario Kern<sup>2</sup>

1 - Academy of the Police Force in Bratislava, Department of Investigation, Bratislava (Slovakia)

2 - Academy of the Police Force in Bratislava, Department of Criminal Law, Bratislava (Slovakia)

**(T.S.11.5) A Dual-Sample Semi-Quantitative Lateral Flow Immunoassay for Forensic Amatoxin Screening**

Ana Cumbo<sup>1</sup>, Jelena Lamovec<sup>2</sup>, Gvozden Tasic<sup>1</sup>, Jelena Mičev<sup>1</sup>, Katarina Bobić<sup>1</sup>, Ivan Lazović<sup>1</sup>, Ana Branković<sup>2</sup>

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2 - University of Criminal Investigation and Police Studies, Faculty of Forensic Sciences and Engineering, Belgrade (Serbia)

**(T.S.11.6) From Hotspot to Fingerprint: Two- and Three-Dimensional Gamma-Ray Imaging for Qualitative and Quantitative Radiological Survey in CBRN Scenarios**

Filippo Gagliardi<sup>1</sup>, Danilo Casagrande<sup>1</sup>, Nadia Cherubini<sup>1</sup>, Alessandro Ciotoli<sup>2</sup>, Giada Gandolfo<sup>1</sup>, Edoardo Gorello<sup>2</sup>, Federico Latini<sup>1</sup>, Egidio Mauro<sup>2</sup>, Marco Pagliuca<sup>2</sup>, Enrico Palumbo<sup>1</sup>, Nicolò Ratto<sup>1</sup>

1 - ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Casaccia Research Center, Rome (Italy)

2 - Nucleco spa, Rome (Italy)

**(T.S.11.7) From Chemistry to Ballistics: An Integrated Review of Modern Small-Arms Propellants and Their Ageing and Ballistic Reliability**

Sara Petković Stojanović<sup>1</sup>, Radovan Radovanović<sup>2</sup>, Jelena Lamovec<sup>1</sup>, Aleksandra Mitrović<sup>1</sup>

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**(T.S.11.8) Determination of Age, Sex, Identity and Habits of Disaster Victims via Limited Dental Remains**

Barbara Strnad<sup>1</sup>, Nikola Milašinović<sup>1</sup>, Snežana Đorđević<sup>2,3</sup>, Smilja Teodorović<sup>1</sup>

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*2 - National Poisoning Control Center, Military Medical Academy, Belgrade (Serbia)*

*3 - Medical Faculty, Military Medical Academy, University of Defence, Belgrade (Serbia)*

**(T.S.11.9) Disaster and Victim Identification in a CBRNe Context. How to Handle a Contaminated Body after a CBRNe Attack. A Risk- and Investigation-Based Triage Model in Accordance with International Forensic and Humanitarian Standards**

Sven Benthaus<sup>1</sup>, Dieter Rothbacher<sup>2</sup>

*1 - ETAF Germany (Germany)*

*2 - CBRN Protection GmbH (Austria)*

**(T.S.11.10) The Emerging Threat of Clandestine Explosive Laboratories: A Forensic and Operational Framework for Investigation and Risk Management**

Maria Cristina Pigro<sup>1</sup>

*1 - Department of Public Security, Central Directorate for the Forensic Science Police and the Cyber Security, Forensic Science Police Service, Rome (Italy)*

**(T.S.11.11) Medical Intelligence Framework for Early Detection of Radiological and Nuclear Emergencies through Weak Signal Fusion**

Elisabetta Galati<sup>1</sup>

*1 - Master CBRNe - Department of Biomedicine and Prevention, University of Rome Tor Vergata, Rome (Italy)*

**(T.S.11.12) Forensics under Toxic Exposure: Gas Detection Strategies in Illegal Cannabis Laboratories**

Saša Gajić<sup>1</sup>, Jelena Lamovec<sup>2</sup>, Ana Branković<sup>2</sup>

*1 - UNODC Consultant/Trainer for safe identification and handling of chemical precursors and synthetic drugs (Serbia)*

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**(T.S.11.13) Development and Validation of a Portable Laser Photoacoustic Spectroscopy Sensor for Remote CBRN Monitoring in the MoSaiC Project**

Claudio Ciceroni<sup>1</sup>, Fabio Pollastrone<sup>1</sup>, Isabella Giardina<sup>1</sup>, Massimo Francucci<sup>1</sup>, Salvatore Almaviva<sup>1</sup>, Marcello Nuvoli<sup>1</sup>, Marco Pistilli<sup>1</sup>, Antonia Lai<sup>1</sup>

*1 - ENEA, Nuclear Department, Physical Technologies for Safety and Health Division, Diagnostics and Metrology Laboratory, Frascati (Italy)*

**(T.S.11.14) Modular Architecture and Analytical Evolution of the rescEU Mobile Chemical Laboratory: Operational Capabilities in CBRN Scenarios, Fire Investigation Forensics, and Advanced Scientific Research.**

Claudio De Maio<sup>1</sup>, Edoardo Cavalieri d'Oro<sup>1</sup>

*1 - Department of Firefighters, Public Rescue and Civil Defence, Ministry of Interior (Italy)*

**(T.S.11.15) Medical Intelligence Early Assessment for CBRNe Emergencies: A Dynamic Model to Estimate Healthcare Response Burden and Support Early Decision-Making**

Elisabetta Galati<sup>1</sup>

*1 - Master CBRNe - Department of Biomedicine and Prevention, University of Rome Tor Vergata, Rome (Italy)*

**(T.S.11.16) Corroboration Capture: Presentation, Provenance, and Mechanism Diversity in Multi-Source Intelligence**

Stefano Marletta<sup>1</sup>

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**(T.S.11.17) Field-Ready Biosensors for CBRNE Threat Detection: User Perspectives and Operational Needs**

Ana Cumbo<sup>1</sup>, Jelena Lamovec<sup>2</sup>, Gvozden Tasic<sup>1</sup>, Jelena Mičev<sup>1</sup>, Ivan Lazović<sup>1</sup>, Ana Branković<sup>2</sup>

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## TECHNICAL SESSION 12 – Emerging Risks: Climate, Conflict, Food Security & Space Weather Impacts on CBRNe Systems

### Chairpersons

- **Prof. Anthony Hooker** — Director of the Centre for Radiation Research, Education, and Innovation at Adelaide University (Australia)
- **Prof. Col. Radovan Karkalic** — University of Defence Military Academy, Serbian Army (Serbia)
- **Col. Stoffer Stienstra** — CBRNe Expert, Royal Dutch Navy (The Netherlands)

The interplay between climate change, geopolitical tensions, technological evolution, and space weather phenomena is generating increasingly complex and interconnected risk environments. This session explores how environmental degradation, conflict dynamics, and both terrestrial and extra-atmospheric drivers contribute to compound and cascading threats affecting safety, health, critical infrastructure, and global stability. In particular, attention is given to the role of space weather and ionospheric variability, including ionospheric scintillation and disturbances, in influencing the reliability of satellite-based systems (GNSS, communication, early warning networks) that are essential for CBRNe monitoring, response, and coordination. Disruptions in positioning, navigation, and timing (PNT) systems can critically impact emergency management, border control, and hazard assessment during CBRNe events. Topics include NaTech (Natural–Technological) disasters, industrial accidents driven by extreme weather, radiological releases during floods or wildfires, and the spread of vector-borne diseases into new regions. The session also addresses food safety and food security, including contamination pathways, nutritional crises, and the concept of “food war” as an emerging geopolitical and hybrid threat. Special emphasis is placed on the interaction between space weather, atmospheric physics, and ground-based CBRNe risk scenarios, highlighting vulnerabilities in technological infrastructures and the need for integrated monitoring systems that combine ionospheric physics, environmental data, and CBRNe modelling tools. Contributions highlighting adaptation strategies, early warning systems, anticipatory action, and cross-sector cooperation between civil protection, agriculture, health authorities, and space weather and atmospheric science communities are particularly encouraged. The aim is to strengthen resilience through integrative policies and innovative methodologies that connect science, governance, and community preparedness across both terrestrial and space-influenced domains.

**Keywords.** *CBRNe Nexus; NaTech; Emerging Risks; Food Security; Conflict; Adaptation; Anticipatory Action; Environmental Health; Public Health Resilience; Space Weather; Ionospheric Scintillation; GNSS Vulnerability; PNT Systems; Atmospheric Physics; Satellite Systems Resilience*

**(T.S.12.1) Climate, Conflict & Food Security – An Overview of the Activities at the Centre for Radiation Research, Education and Innovation, Adelaide University**

Antony M. Hooker<sup>1</sup>, Nigel A. Spooner<sup>1</sup>

*1 - Centre for Radiation Research Education and Innovation (CRREI), Adelaide University, Adelaide, South Australia (Australia)*

**(T.S.12.2) Nanoengineered Activated Carbon Sorbents for Enhanced Adsorption of Chemical Warfare Agents in CBRN Protective Textiles**

Radovan Karkalic<sup>1</sup>, Boban Cekovic<sup>1</sup>, Ivana Perovic<sup>1</sup>, Jadranka Miletic Vukajlovic<sup>1</sup>, Vladan Anicijevic<sup>1</sup>, Marina Dabetic<sup>1</sup>, Dalibor Jovanovic<sup>1</sup>

*1 - University of Defense, Military Academy, Belgrade, Serbia (Serbia)*

**(T.S.12.3) There Will Be Another Nasty Virus; How Will We Be Prepared?**

Stef Stienstra<sup>1</sup>

*1 - Royal Dutch Navy and Joint NATO CBRN-defense CoE (The Netherlands)*

**(T.S.12.4) From Space Weather Monitoring to Operational Risk Management: The INGV Experience**

Vincenzo Romano<sup>1</sup>, Giulia Abbati<sup>1</sup>, Marco Badalamenti<sup>1</sup>, Claudio Cesaroni<sup>1</sup>, Carlo Marcocci<sup>1</sup>, Emanuele Pica<sup>1</sup>, Luca Spogli<sup>1</sup>, Riccardo Tozzi<sup>1</sup>, Massimo Viola<sup>1</sup>

*1 - National Institute of Geophysics and Volcanology (INGV) (Italy)*

**(T.S.12.5) From Production Line to Ballistic Performance: Modern Technologies and Safety Systems in Gunpowder Manufacturing**

Sara Petković<sup>1</sup>, Radovan Radovanović<sup>1</sup>, Stevan Stupar<sup>1</sup>, Jelena Lamovec<sup>1</sup>, Aleksandra Mitrović<sup>1</sup>

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**(T.S.12.6) Operations in an Altered Environment: Resilience of Digitalized Critical Infrastructure, CBRNE and Autonomous Military Systems to the Impact of Space Weather and Atmospheric Disturbances**

Danijela Ivanovic<sup>1</sup>, Marija Micovic<sup>1</sup>, Hatidza Berisa<sup>2</sup>

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*2 - Military Academy of the University of Defense of Belgrade, Belgrade (Serbia)*

**(T.S.12.7) INGV Monitoring Room: Seismic Surveillance and Tsunami Alert, Operational Services for the Italian Civil Protection Department and the Public**

Lucia Margheriti<sup>1</sup>, National Earthquake Observatory<sup>1</sup>

*1 - National Institute of Geophysics and Volcanology (INGV) (Italy)*

**(T.S.12.8) Particle-Tracking Assessment of Cosmic Radiation Dose in Aviation**

Alessandro Bucci<sup>1</sup>, Pio Ciro Aspetti<sup>1</sup>, Colomba Russo<sup>1</sup>, Andrea Gloria<sup>1</sup>, Luca Romano<sup>1</sup>, Francesco Geri<sup>1</sup>, Laura Mucciarelli<sup>2</sup>, Sabrina Rao<sup>2</sup>, Federico Mancinelli<sup>2</sup> and Andrea Malizia<sup>2</sup>

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**(T.S.12.9) Effects of Radiation on Acute Immunological and Physiological Outcomes In Vivo**

Dixon DL<sup>1,2</sup>, McEvoy-May J<sup>1</sup>, Thome C<sup>3</sup>, Morel K<sup>4</sup>, De Bellis D<sup>1,2</sup>, Puukila S<sup>2,3</sup>, Tharmalingam S<sup>3</sup>, Morris C<sup>2</sup>, Donaldson A<sup>4</sup>, Kalnins C<sup>1</sup>, Boreham D<sup>3</sup>, Sweeney C<sup>4</sup>, Hooker AM<sup>1,2</sup>

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3 - NOSM University, Ontario (Canada)

4 - South Australian immunoGENomics Cancer Institute (SAiGENCI), Adelaide University (Australia)

**(T.S.12.10) Uncovering Compound Climate-CBRNe Events: A Classification Protocol for Industrial-Accident Databases**

Alba Fagnani<sup>1</sup>

1 - Master CBRNe - Department of Biomedicine and Prevention, University of Rome Tor Vergata, Rome (Italy)

**(T.S.12.11) An Integrated Preparedness Framework for Flood-Induced NaTech Risk Management**

Francesco Geri<sup>1</sup>, Andrea Gloria<sup>1</sup>, Alessandro Bucci<sup>1</sup>, Federico Mancinelli<sup>2</sup>, Sabrina Rao<sup>2</sup>, Andrea Malizia<sup>2</sup>

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2 - Department of Biomedicine and Prevention - University of Rome “Tor Vergata”, Rome (Italy)

**(T.S.12.12) Beyond the Battlefield: An IUPAC Initiative on the Long-Term Environmental and Health Impacts of Military Chemicals**

Matteo Guidotti<sup>1</sup>, Miguel Angel Sierra<sup>2</sup>, Stefano Econdi<sup>1</sup>

1 - CNR-SCITEC, Milano, Italy and IUPAC Division of Chemistry and Environment (Italy)

2 - Universidad Complutense, Madrid (Spain)

**(T.S.12.13) Narrative Grafting in Cognitive Warfare: How Seed Events and Historical Anchors Transform a Hospital Fentanyl Theft into CBRNe Threat Frames**

Marco Filippi<sup>1</sup>, Cecilia Sandroni<sup>2</sup>, Liuva Capezzani<sup>3</sup>

1 - SME Medical Intelligence, CBRNe and Cognitive Warfare (Italy)

2 - Italiens PR (Italy)

3 - SME Human Security Domain (Italy)

## POSTER SESSIONS

The Poster Sessions at the SICC Series – CBRNe Conference 2026 will span all twelve thematic areas of the conference — from emergency and crisis management, geopolitics, AI, cybersecurity, and training, through to medical and biosafety, modelling, radiological & nuclear safety, chemical & explosive threats, biological & biotech risks, intelligence & forensics, and emerging climate/conflict/food-security risks.

These poster presentations provide a dynamic platform for researchers, industry professionals, and practitioners to showcase work in progress, novel tools or technologies, case-studies, field operations, or conceptual frameworks — across the full spectrum of CBRNe safety and security.

Unlike oral talks, posters allow direct, one-on-one engagement: you stand by your poster, invite questions, exchange ideas, receive feedback, and make new connections in an informal yet highly interactive environment. This makes the format especially valuable for early-career researchers and young professionals, offering a low-threshold but high-visibility opportunity to present their work, build confidence, test ideas, and engage with the global CBRNe community.

Every accepted poster will be displayed during dedicated poster blocks throughout the conference, with authors present to discuss and network. A highlight of the session will be the **Best Poster Award**, recognising outstanding contributions in scientific merit, innovation, clarity of presentation, and potential impact. Whether your work is technical, analytical, operational, or educational, we encourage you to participate — your poster might spark new collaborations, feedback, or even future projects.

A Commission of Experts guided by **Prof. Pasquale Gaudio** will evaluate the poster presentations and assign three Best Poster Awards to the most outstanding contributions.

**The 3 best poster will win the "Best Poster Award" competition for SICC Series CBRNe Conference 2026.**

The committee brings together internationally recognized experts from academia, research organizations, defence and emergency response institutions, ensuring an independent and multidisciplinary evaluation of all posters presented during the conference.

Committee Members:

- **Prof. Pasquale Gaudio** – Chair (University of Rome Tor Vergata, Italy)
- **Prof. Antony M. Hooker** – University of Adelaide (Australia)
- **Dr. Frank Duschek** – DLR – German Aerospace Center (Germany)
- **Dr. Nicola Ranieri** – ENEA (Italy)
- **Dr. Ana Branković** – University of Criminal Investigation and Police Studies (Serbia)
- **Dr. Alan Kearney** – Irish Defence Forces (Ireland)
- **Dr. Gvozden Tasić** – Vinča Institute of Nuclear Sciences (Serbia)
- **Dr. Alessandro Puleio** – University of Rome Tor Vergata (Italy)
- **Col. Youssef Alkaabi** – Abu Dhabi Civil Defence Authority (United Arab Emirates)
- **Dr. Michael Ian Thornton** – INAC CBRNe (United Kingdom)
- **Prof. Michela Gelfusa** – University of Rome Tor Vergata (Italy)

## POSTER SESSION 1

### **(P.S.1.1) Natural Botanical Supplements to Mitigate Radiation-Induced Cytogenetic Damage for Defense Forces, First Responders, and Civilians in CBRNe Scenarios**

F. d'Errico<sup>1,2</sup>, F. Barco<sup>1</sup>, T. Butini<sup>3</sup>, F. Caradonna<sup>3</sup>, S. de Souza Lalic<sup>1,4,5</sup>, M. Marrale<sup>6</sup>, F. Naselli<sup>3</sup>, A. Malizia<sup>7</sup>

1 - School of Engineering, University of Pisa (Italy)

2 - School of Public Health, Yale University, and Yale Center for Emergency Preparedness and Disaster Response, New Haven, CT (USA)

3 - Department of Biological, Chemical, and Pharmaceutical Sciences and Technologies "STEBICEF", University of Palermo (Italy)

4 - Department of Physics, Federal University of Sergipe, São Cristóvão-SE (Brazil)

5 - Department of Diagnostic Radiology, Federal University of São Paulo (Brazil)

6 - Department of Physics and Chemistry "Emilio Segrè", University of Palermo (Italy)

7 - Department of Biomedicine and Prevention, University of Roma 2, Tor Vergata (Italy)

### **(P.S.1.2) Resilience DA-2024: First Development Action for Medical Counter Measures Performed in the Frame of the RESILIENCE FPA Consortium**

Randa El Fekih<sup>1</sup>, Fanny Caputo<sup>1</sup>, Lou Pinchon-Carron De La Carriere<sup>1</sup>

1 - CEA - French Alternative Energies and Atomic Energy Commission (France)

### **(P.S.1.3) Robust Physics-Guided Hierarchical Transformer for Chemical Warfare Agent Classification Using Time-Series Sensor Data**

Seungmin Jang<sup>1</sup>, Seongwoo Lee<sup>1</sup>, Minji Kim<sup>1</sup>, Jiwoong Heo<sup>1</sup>, Seung Jung Yu<sup>1</sup>, Heesoo Jung<sup>1</sup>, Jiyun Seo<sup>1</sup>

1 - 3rd R&D Institute – 5th Directorate, Agency for Defense Development (ADD), Daejeon 34186 (Republic of Korea)

### **(P.S.1.4) Development and Validation of a Vapor-Based Swatch Test System for Chemical Vapors**

Seongwoo Lee<sup>1</sup>, Min Ji Kim<sup>1</sup>, Seungmin Jang<sup>1</sup>, Jiwoong Heo<sup>1</sup>, Seungjung Yu<sup>1</sup>, Hyunsook Jung<sup>1</sup>, Heesoo Jung<sup>1</sup>

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### **(P.S.1.5) Kinetic Insights and Structural Characterization of a Novel Nitrostarch-Based Nanothermite: The NPS-MgAl/CuO Biocomposite for Advanced Energetic Applications**

Nassima Sahnoun<sup>1</sup>, Amir Abdelaziz<sup>1</sup>, Amel Meslem<sup>1</sup>, Djalal Trache<sup>1</sup>

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### **(P.S.1.6) CBRNe4rail: Enhancing European Passenger Rail Resilience through an Integrated CBRNe Preparedness and Training Framework**

Valeria Spizzichino<sup>1</sup>, Monica Cimino<sup>1</sup>, Paula Fernández Díaz<sup>2</sup>, Massimiliano Guarneri<sup>1</sup>, Grigore Havârneanu<sup>2</sup>, Laura Petersen<sup>2</sup>, Simone Santoro<sup>1</sup>

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**(P.S.1.7) Mid-Infrared LPAS for Rapid Screening of Hazardous Water Contaminants**

Eleonora Stefanutti<sup>1</sup>, Massimo Francucci<sup>1</sup>, Isabella Giardina<sup>1</sup>, Antonia Lai<sup>1</sup>

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**(P.S.1.8) Managing Biological Hazards in Hamburg: Insights into Interdisciplinary Communication and Coordination**

Jette Zimmermann<sup>1</sup>, Anna Burhorst<sup>2</sup>, Lena Ehlers<sup>1</sup>, Matthias Freudenberg<sup>3</sup>, Birgit Grassl<sup>1</sup>, Lennart Hoschke<sup>2</sup>, Jörg Jankowski<sup>3</sup>, Johannes Kröger<sup>4</sup>, Annika Kurz<sup>1</sup>, Maja Verena Nielsen<sup>4</sup>, Dunja Manal Sabra<sup>2</sup>, Daniel Schmidt<sup>3</sup>, Helge Schumacher<sup>2</sup>, Manuela Wahlen<sup>4</sup>, Gunnar Jeremias<sup>2</sup>

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2 - University of Hamburg (Germany)

3 - Hamburg Fire Department (Germany)

4 - Public Health Department Hamburg-Altona (Germany)

**(P.S.1.9) The on field integrated approach of the National CBRN Centre of the Italian Fire and Rescue Service within the framework of safeguard activities: organizational and technical aspects.**

Chiara Agrillo<sup>1</sup>, Alessio Anselmi<sup>1</sup>, Achille Antenucci<sup>1</sup>, Ilaria Cardinale<sup>1</sup>, Enzo Ciarleglio<sup>1</sup>, Francesco Crisafulli<sup>1</sup>, Stefano Croce<sup>1</sup>, Vittorio De Angelis<sup>1</sup>, Paolo Di Marcello<sup>1</sup>, Sergio Febrini<sup>1</sup>, Fabrizio Gargano<sup>1</sup>, Gianluca Gasparri<sup>1</sup>, Pierpaolo Gentile<sup>1</sup>, Marco Lazzari<sup>1</sup>, Stefano Martinelli<sup>1</sup>, Roberto Melmeluzzi<sup>1</sup>, Luca Tamburo<sup>1</sup>, Francesco Vertola<sup>1</sup>

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**(P.S.1.10) NBCR Monitoring of CO<sub>2</sub> Emissions in the Campi Flegrei Area: Operational Experience of the Naples Fire Brigade CBRN Unit**

Francesco Amitrano<sup>1</sup>

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**(P.S.1.11) Beyond the Emergency, Rescue That Includes: From CBRN Response to the Centrality of the Person in Inclusive Rescue**

Giorgio Basile<sup>1</sup>, Bidinost Roberto<sup>1</sup>, De Piero Francesco<sup>1</sup>, Geloso Antonella<sup>1</sup>, Zanut Stefano<sup>1</sup>

1 - Department of Firefighters, Public Rescue and Civil Defence, Comando Provinciale VV.F. di Pordenone (Italy)

**(P.S.1.12) Decontamination of Personal Protective Equipment Used by Firefighters: Current Practices and Technological Innovation Perspectives**

Salvatore Biondi<sup>1</sup>, Domenico Cuzzo<sup>1</sup>, Raffaele Cozzolino<sup>1</sup>

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**(P.S.1.13) An Optical Sensing Simulation Framework for CBRNe Reconnaissance Vehicles and Multi-Platform Sensor Deployment**

Seryeyohan Cho<sup>1</sup>, Young-Jin Koh<sup>1</sup>, Jungho Lee<sup>1</sup>, Jongseon Kim<sup>1</sup>, Min-Kyung Lee<sup>1</sup>, Sang-Soo Han<sup>1</sup>, Hyunwoo Nam<sup>1</sup>, Byunghoon Lee<sup>1</sup>, Young-Su Jeong<sup>1</sup>, Hyeyun Ku<sup>1</sup>, Yeonchul Ha<sup>1</sup>, Donghee Kang<sup>1</sup>, Jae Hwan Lee<sup>1</sup>, Sun Kyung Choi<sup>1</sup>

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**(P.S.1.14) Conceptual Design of a UAV-Based Rapid Radiological Screening System for Emergency Response Scenarios.**

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**(P.S.1.15) Use of Earth Observation Data and Weather-Climate Analysis to Characterize a Site at Potential CBRNe Risk**

Luca Delli Passeri<sup>1</sup>, Gianfranco Vulpiani<sup>1</sup>, Giovanni Valgimigli<sup>1</sup>

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**(P.S.1.16) Forensic X-Ray Systems in CBRNe Contexts: Analysis, Safety and Operational Control**

Giuseppe Di Maggio<sup>1</sup>

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**(P.S.1.17) Integrated CBRN Solutions for Dynamic Threat Environments: From Real-Time Threat Detection to Scalable Response**

Alessandra Dragani<sup>1</sup>

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**(P.S.1.18) Assessing the Regulatory Integration of Radiological and Nuclear Preparedness into the Italian Hospital Major Incident Planning Framework (PEIMAF): A Gap Analysis and Strategic Framework Proposal**

Elisabetta Galati<sup>1</sup>

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**(P.S.1.19) MCMs from Field Diagnostics to Targeted Therapeutics: The RESILIENCE-R-2025 Project on Innovative PoC Diagnostics Devices, Antivirals, and Nano-Reactivators against Nerve Agents**

Téo Géraudie<sup>1</sup>, Fanny Caputo<sup>1</sup>, Christophe Junot<sup>1</sup>

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**(P.S.1.20) Molecular Docking and Binding Affinity Analysis of Synthetic Carbamate Inhibitors against Human Acetylcholinesterase (hAChE)**

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**(P.S.1.21) Hierarchical Robust Control and Adaptive Bias Compensation for UGV-Winch-Tethered UAVs in CBRN Decontamination Operations**

Eun Mee Goh<sup>1</sup>, Kyeong Min Cho<sup>1</sup>, Jiwoong Heo<sup>1</sup>, Heesoo Jung<sup>1</sup>, Soo Jean Han<sup>2</sup>

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2 - Korea Advanced Institute of Science and Technology (Republic of Korea)

**(P.S.1.22) Development of a Compact Atmospheric Boundary Layer Wind Tunnel System for Investigating the Secondary Evaporation of Chemical Warfare Agents.**

Jiwoong Heo<sup>1</sup>, Hyunsook Jung<sup>1</sup>, Seungmin Jang<sup>1</sup>, Jihwan Lee<sup>1</sup>, Hoon Park<sup>1</sup>, Seungjung Yu<sup>1</sup>, Byeng-Hwang Park<sup>1</sup>, Heesoo Jung<sup>1</sup>

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**(P.S.1.23) Development of a Personal CBRN Contamination Detection System**

Min Ji Kim<sup>1</sup>, Seongwoo Lee<sup>1</sup>, Jiwoong Heo<sup>1</sup>, Seungjung Yu<sup>1</sup>, Minkyung Lee<sup>1</sup>, Jungho Lee<sup>1</sup>, Seungmin Jang<sup>1</sup>, Eunmee Goh<sup>1</sup>, Kyeong Min Cho<sup>1</sup>, Jiyun Seo<sup>1</sup>, Heesoo Jung<sup>1</sup>, Sun Kyung Choi<sup>1</sup>

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**(P.S.1.24) Integrated Autoinjector Solutions for Immediate Medical Response in CBRNe and Mass Casualty Incidents**

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2 - ChemProtect.SK s.r.o., Prague (Czech Republic)

**(P.S.1.25) Operational Evolution of Public Rescue in the Face of Major Epidemiological Emergencies in Italy**

Michele La Veglia<sup>1</sup>

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**(P.S.1.26) Cysteine-Assisted LC-MS Analysis of 2-Chlorovinylarsonous Acid, a Lewisite Degradation Product**

Hyun Hee Lee<sup>1</sup>, Jeong-Yu Son<sup>1</sup>

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**(P.S.1.27) Development of a Specific Polyclonal F(ab')<sub>2</sub> Antitoxin for Ricin Poisoning**

Sylvain Legrand<sup>1</sup>, Houda Boukhebza<sup>1</sup>, Romane Arlaud<sup>1</sup>, Noémie Aurine<sup>1</sup>, Paul Willems<sup>1</sup>, Véronique Juillard<sup>1</sup>

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**(P.S.1.28) A Grid-Based Python Approach to Radiological Dose Assessment on Real Terrain**

**Federico Mancinelli<sup>1,4</sup>, Francesco Geri<sup>3</sup>, Andrea Gloria<sup>2</sup>, Sabrina Rao<sup>1,4</sup>, Alessandro Bucci<sup>2</sup>, Laura Zambelli<sup>1,4</sup>, Andrea Malizia<sup>1,4</sup>**

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**(P.S.1.29) Standard and Experimental Biological Surveillance Protocols Implemented by Italian Department of Firefighters Public Rescue and Civil Defense – National Fire Corps – C.B.R.N. Advanced Team of Venice during the Milano-Cortina 2026 Winter Olympic and Paralympic Games**

**Salvatore Minghetti<sup>1</sup>, Fabiana Tarantelli<sup>1</sup>, Giampaolo Muratore<sup>1</sup>, Ugo Calardo<sup>1</sup>, Enrico Semenzato<sup>1</sup>, Alessio Morfino<sup>1</sup>, Alessandro Zanetti<sup>1</sup>**

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**(P.S.1.30) Italian Navy CBRN Organization**

**Marco Montella<sup>1</sup>, Gaetano Matrone<sup>1</sup>**

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**(P.S.1.31) CBRN SMART TRAINING CENTER: From the rescEU CBRN-DSIM-IT Capacity to the Creation of a Digital Training Platform for Complex Scenarios**

**Noemi Parente<sup>1</sup>, Davide Arcangeli<sup>1</sup>, Biagio Sanfilippo<sup>1</sup>, Edoardo Cavalieri d'Oro<sup>1</sup>**

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**(P.S.1.32) Beyond the Casualty Count: Estimating Behaviourally-Driven Health Demand in CBRNe Events**

**Adriana Pichierri<sup>1,2</sup>, Carmelo Macrì<sup>3</sup>, Claudio Di Turi<sup>4</sup>**

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**(P.S.1.33) Resilience RA-2024: The Subproject-2 In Vitro Diagnostics of Toxin Intoxication (Ricin, Abrin, BoNTs A, B, E and F) and MCM against These Toxins (TOXINS)**

Fabrizio Anniballi<sup>1</sup>, Arnaud Avril<sup>2</sup>, François Becher<sup>3</sup>, Laurent Bellanger<sup>3</sup>, Fanny Caputo<sup>3</sup>, Alexandre Caumon<sup>3</sup>, Julie Dano<sup>3</sup>, Hugo Dorison<sup>3</sup>, Brigitte Dorner<sup>4</sup>, Marine Dumas<sup>7</sup>, Donyia El Akrouti<sup>7</sup>, Raphaël Guérois<sup>5</sup>, Marie Hautière<sup>3</sup>, Jasmin Huber<sup>6</sup>, Ylane Idir<sup>3</sup>, Christophe Junot<sup>3</sup>, Camille Kropp<sup>3</sup>, Marie Ley<sup>3</sup>, Julie Linussio<sup>8</sup>, Hervé Nozach<sup>3</sup>, Johannes R. Peham<sup>6</sup>, Hans-Werner Mages<sup>4</sup>, Karla Perez-Toralla<sup>3</sup>, Anselme L. Perrier<sup>7</sup>, Lou Pinchon-Carron de la Carrière<sup>3</sup>, Audrey Rouaix<sup>3</sup>, Stéphanie Simon<sup>3</sup>, Martin Skiba<sup>4</sup>, Daniel Stern<sup>4</sup>, François Thénier<sup>5</sup>, Marilène Trancart<sup>3</sup>, Tom Van Nieuwenhuysen<sup>8</sup>, Cécile Vincent<sup>3</sup>, Baptiste Vivès<sup>3</sup>, Hervé Volland<sup>3</sup>, Laura-Varenne Wilk<sup>4</sup>, Sylvia Worbs<sup>4</sup>

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7 - Université Paris-Saclay, CEA, Molecular Imaging Research Center, Fontenay-aux-Roses (France)

8 - Foodborne Pathogens Service, Sciensano, Brussels (Belgium)

**(P.S.1.34) ATR-FTIR Spectroscopy Coupled with Chemometrics for the Identification and Quantification of Illicit Drugs and Cutting Agents**

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**(P.S.1.35) Designing Evidence-Based Knowledge-Transfer Strategies through Integrated CBRNE Competence-Mapping Methods: The SparkUp Project**

Sabrina Rao<sup>1</sup>, Alba Iannotti<sup>2,3,4</sup>, Colomba Russo<sup>2,3,4</sup>, Federico Mancinelli<sup>1</sup>, Gian Marco Ludovici<sup>1,3</sup>, Francesco Geri<sup>2</sup>, Andrea Gloria<sup>2</sup>, Alessandro Bucci<sup>2</sup>, Andrea Malizia<sup>1,3</sup>

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**(P.S.1.36) Accessibility in CBRNe Risk Communication: The Experience of Emergenza Sordi APS as a Community-Based Model for Inclusive Emergency Preparedness**

Rotondi Luca<sup>1</sup>, Zuddas Marta<sup>1</sup>, Mauri Davide<sup>1</sup>

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**(P.S.1.37) A Comprehensive Database of Radiological and Nuclear Events: Historical Trends, Statistical Analysis, and Lessons for Risk Assessment**

Colomba Russo<sup>1</sup>, Pio Ciro Aspetti<sup>1</sup>, Alessandro Bucci<sup>1</sup>, Gian Marco Ludovici<sup>2</sup>, Alba Iannotti<sup>1</sup>,  
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**(P.S.1.38) Forensic Genetic Intelligence and CBRNe Risk Mitigation in Clandestine Refineries: An Italian State Police Case Study on International Law Enforcement Cooperation**

Santoro Maristella<sup>1</sup>, Nuzzo Sara<sup>1</sup>, Vernarecci Stefano<sup>1</sup>

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**(P.S.1.39) A Comprehensive Comparative Analysis of Biological Agent Detection Techniques**  
Antonio Scorrano<sup>1</sup>

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**(P.S.1.40) Edge AI-Based CBRN Personal Protection and C2 Visualization System for Enhanced Battlefield Situational Awareness**

Jiyun Seo<sup>1</sup>, Min Ji Kim<sup>1</sup>, Minkyung Lee<sup>1</sup>, Jungho Lee<sup>1</sup>, Seungjung Yu<sup>1</sup>, Seongwoo Lee<sup>1</sup>, Jiwoong Heo<sup>1</sup>, EunMee Goh<sup>1</sup>, Kyeong Min Cho<sup>1</sup>, Seungmin Jang<sup>1</sup>, Jihwan Lee<sup>1</sup>, Heesoo Jung<sup>1</sup>, Sun Kyung Choi<sup>1</sup>

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**(P.S.1.41) Influence on Radioactivity of the Correlation between Pollution and Atmospheric Conditions.**

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**(P.S.1.42) The “Grifone 2026” Exercise: Joint and Multinational Search and Rescue with CBRN Response in an Impervious Mountain Environment**

Salvatore Corrao<sup>1</sup>, Michele Columbu<sup>1</sup>, Francesco Giordano<sup>1</sup>, Andrea Spiggia<sup>1</sup>

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**(P.S.1.43) A GPS-Based Virtual Radiation Measurement System Integrated with Dirty-Bomb Hazard-Prediction Simulator for RN First-Response Training**

Kosuke Tanabe<sup>1</sup>, Ken'ichi Tsuchiya<sup>2</sup>, Keisuke Uehara<sup>3</sup>, Yo Ishigaki<sup>4</sup>, Takashi Moritake<sup>5</sup>, Yoshinori Matsumoto<sup>6</sup>, Munehiko Kowatari<sup>5</sup>, Chi Young Han<sup>7</sup>

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**(P.S.1.44) Development of First Response Methods for CBRN Threats Using Mobile Robots**

Ken'ichi Tsuchiya<sup>1</sup>, Hiroaki Nakahara<sup>2</sup>, Hajime Miyaguchi<sup>3</sup>, Shun Sugaya<sup>4</sup>, Ryuhei Hirose<sup>5</sup>, Kosuke Tanabe<sup>4</sup>, Yoshihito Fujinami<sup>6</sup>, Norimitsu Akiba<sup>4</sup>, Hidetoshi Kakuda<sup>4</sup>, Yuko Kazui<sup>5</sup>, Akinori Yamaguchi<sup>5</sup>, Takeshi Ohmori<sup>5</sup>, Kenji Kurosawa<sup>7</sup>

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3 - Third Department of Forensic Science, National Research Institute of Police Science (Japan)

4 - Physics Section, National Research Institute of Police Science (Japan)

5 - Fifth Chemistry Section, National Research Institute of Police Science (Japan)

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**(P.S.1.45) A Comparative Study of Machine Learning Techniques for Gamma Spectra-Based Identification of Radioactive Materials**

Gianfranco Vulpiani<sup>1</sup>

1 - Presidency of the Council of Ministers, Department of Civil Protection, Rome (Italy)

**(P.S.1.46) An Urban CBRN Operational M&S Framework Integrating CFD-Based Hazard Dispersion Modeling**

Sungjin Won<sup>1</sup>, Jiyun Seo<sup>1</sup>, Dongha Kah<sup>1</sup>, Jingyu Heo<sup>2</sup>, Minchae Kim<sup>2</sup>, Dokyun Kim<sup>2</sup>, Sihan Kim<sup>3</sup>, Youngsoo Kim<sup>3</sup>

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**(P.S.1.47) A 2-Propanol Suspension Strategy for Robust and Long-Term Stable  $\mu$ PADs in On-Site Nerve Agent Detection**

Akinori Yamaguchi<sup>1</sup>, Shota Oyama<sup>2</sup>, Akihiko Ishida<sup>3</sup>, Takanori Enomoto<sup>4</sup>, Nobuyuki Sanari<sup>5</sup>, Hajime Miyaguchi<sup>6</sup>, Manabu Tokeshi<sup>7</sup>

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**(P.S.1.48) Brindisi G7 Summit - National Fire and Rescue Service CBRN Capacity Organization**

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**(P.S.1.49) Climatic influence in the Chemical, Biological and Radiological (CBRN) fields**

Saeed Bin Hader<sup>1</sup>

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**(P.S.1.50) LC-HRMS-Based Peptide Mapping of OPNA-Adduct Butyrylcholinesterase for Biomarker Identification of Organophosphorus Nerve Agent Exposure**

Hyewon Kim<sup>1</sup>, Hyun Hee L. Lee<sup>1</sup>

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## POSTER SESSION 2

### **(P.S.2.1) A Multimodal VIS-NIR Hyperspectral Imaging Platform with Halogen Illumination and UV-LED Induced Fluorescence for CBRNE Applications across Laboratory, Field, and UGV-Based Scenarios**

Roberto Chirico<sup>1</sup>, Ivano Menicucci<sup>1</sup>, Marco Pistilli<sup>1</sup>, Mateusz Szala<sup>2</sup>, Karol Zalewski<sup>2</sup>, Marcin Hara<sup>2</sup>, Łukasz Krzowski<sup>3</sup>

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### **(P.S.2.2) Raman Spectroscopy for On-Site Detection of Explosive-Related Residues on Complex and Environmental Matrices in CBRNe and Forensic Scenarios**

Naomi Falsini<sup>1</sup>, Alberto Ubaldini<sup>1</sup>, Chiara Telloli<sup>1</sup>, Fabio Borgognoni<sup>1</sup>, Antonietta Rizzo<sup>1</sup>

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### **(P.S.2.3) Detection and Characterization of Trace Materials by Laser Induced Acoustic Signal and Plasma Emission**

Violeta Lazic<sup>1</sup>, Fabrizio Andreoli<sup>1</sup>, Marco Pistilli<sup>1</sup>, Ivano Menicucci<sup>1</sup>, Roberto Chirico<sup>1</sup>, Marco Rao<sup>1</sup>, Biljana Stankov<sup>2</sup>, Christian Ulrich<sup>3</sup>, Frank Schnürer<sup>3</sup>, Pasqualino Gaudio<sup>4</sup>

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4 - University of Rome Tor Vergata, Department of Industrial Engineering, Via del Politecnico 1, 00133 Roma (Italy)

### **(P.S.2.4) SAi001 Provides Multi-Organ Protection from Lethal Radiation Exposure**

Katherine Morel<sup>1</sup>, Agnieszka Kumorkiewicz-Jamro<sup>1</sup>, Christie Orshcell<sup>2</sup>, Anthony Hooker<sup>1</sup>, Chunxia Zhao<sup>1</sup>, Pamela Sykes<sup>3</sup>, Christopher Sweeney<sup>1</sup>

1 - Adelaide University, Adelaide (Australia)

2 - Indiana University, Indianapolis (USA)

3 - Flinders University, Bedford Park (Australia)

### **(P.S.2.5) Tailoring the Thermal Reactivity and Safety of Starch-Based Energetic Polymers: The Interplay of Amylose Content and Nitration Conditions**

Nassima Sahnoun<sup>1</sup>, Amir Abdelaziz<sup>1</sup>, Amel Meslem<sup>1</sup>, Djalal Trache<sup>1</sup>

1 - Energetic Materials Laboratory, Teaching and Research Unit of Energetic Processes, Ecole Militaire Polytechnique, BP 17 Bordj El-Bahri, Algiers (Algeria)

### **(P.S.2.6) Testing and Validating CBRNe Capabilities in Railway Hubs: The CBRNe4rail Field Exercise and Evaluation Methodology**

Valeria Spizzichino<sup>1</sup>, Simone Santoro<sup>1</sup>

1 - ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Frascati Research Centre, Frascati (Italy)



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**(P.S.2.7) Field Evaluation of Phytoremediation for Mitigating Legacy Arsenic Contamination: Implications for CBRNe Chemical Risk Reduction**

Mariam Tabatadze<sup>1</sup>, Lali Shavliashvili<sup>1</sup>

*1 - Institute of Hydrometeorology of the Georgian Technical University, Tbilisi (Georgia)*

**(P.S.2.8) A Multi-Criteria Decision Framework for Assessing Urban Resilience Following a Radiological Dispersal Event: Development of the Urban Domino Impact Index (UDII) and Application to the Rome Metro Network**

Antonella Accettura<sup>1</sup>, Michael Ian Thornton<sup>1</sup>, Elisabetta Galati<sup>3</sup>, Alba Fagnani<sup>1</sup>

*1 - Master CBRNe - Department of Biomedicine and Prevention, University of Rome Tor Vergata (Italy)*

**(P.S.2.9) Emerging Fourth-Generation Nerve Agents (Novichoks): Toxicological Dynamics, Analytical Challenges, and Operational Response Strategies in Modern CBRNe Scenarios**

Claudio Allegretti<sup>1</sup>

*1 - Master CBRNe - Department of Biomedicine and Prevention, University of Rome Tor Vergata (Italy)*

**(P.S.2.10) Low-Cost Electronics for Scintillator–SiPM Coupled Gamma Detectors: Design and Experimental Characterization**

Pio Ciro Aspetti<sup>1</sup>, Alessandro Bucci<sup>1</sup>, Colomba Russo<sup>1</sup>, Riccardo Quaranta<sup>1</sup>, Andrea Malizia<sup>2</sup>

*1 - Department of Industrial Engineering, University of Rome Tor Vergata, Rome (Italy)*

*2 - Department of Biomedicine and Prevention, University of Rome Tor Vergata (Italy)*

**(P.S.2.11) Impact of Combined Heat and Dynamic High-Pressure Treatments on Protein Mixtures: Towards Sustainable and Functional Plant-Based Dairy Systems Addressing Climate and Food Safety Challenges**

Abdessalem Beghdadi<sup>1</sup>

*1 - Ecole Militaire Polytechnique, BP 17, Bordj El-Bahri, Algiers 16046 (Algeria)*

**(P.S.2.12) Space Weather and Radiation Safety in Modern Aviation**

Alessandro Bucci<sup>1</sup>, Pio Ciro Aspetti<sup>1</sup>, Colomba Russo<sup>1</sup>, Andrea Gloria<sup>1</sup>, Luca Romano<sup>1</sup>, Francesco Geri<sup>1</sup>, Laura Mucciarelli<sup>2</sup>, Sabrina Rao<sup>2</sup>, Federico Mancinelli<sup>2</sup> and Andrea Malizia<sup>2</sup>

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*2 - Department of Biomedicine and Prevention, University of Rome Tor Vergata, Rome (Italy)*

**(P.S.2.13) CBRNe Forensic Investigation: Challenges, Methodologies and Future Perspectives**

Emanuela Cipolletta<sup>1</sup>, Flavia Acquafredda<sup>1</sup>, Dominique Terranova<sup>1</sup>, Stefano Vernarecci<sup>1</sup>

*1 - Italian National Police, Forensic Science Police Service, V Division, Forensic Genetics, Ministry of Interior (Italy)*

**(P.S.2.14) The Head of State in Nuoro: The CBRN Security Posture for the Visit of the President of the Italian Republic**

Salvatore Corrao<sup>1</sup>, Michele Columbu<sup>1</sup>, Andrea Spiggia<sup>1</sup>

*1 - Department of Firefighters, Public Rescue and Civil Defence (Italy)*



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**(P.S.2.15) Tsunami Ready Gaeta: Mapping Na-Tech and CBRNe Vulnerabilities in a Mixed Port-Residential Coastal Territory**

Valentina Di Maccio<sup>1,2</sup>

1 - Department of Firefighters, Public Rescue and Civil Defence (Italy)

2 - 2nd Level Master Course in "Protection against CBRNe Events" – Advanced Level for CBRNe Advisors of Decision Makers, University of Rome Tor Vergata (Italy)

**(P.S.2.16) Integrated EOD and Chemical Detection Strategy for Safe Response to Suspected Chemical-IED Incidents**

Yirui Lidia Dong<sup>1</sup>

1 - Master CBRNe - Department of Biomedicine and Prevention, University of Rome Tor Vergata (Italy)

**(P.S.2.17) Isolation and Genomic Characterization of Environmental Bacteriophages Associated with Bacillus anthracis: Towards Sustainable Anthrax Decontamination Strategies.**

Viviana Manzulli<sup>1</sup>, Luigina Serrecchia<sup>1</sup>, Loredana Capozzi<sup>1</sup>, Stefano Castellana<sup>1</sup>, Les Baillie<sup>2</sup>,

Donatella Farina<sup>1</sup>, Lorenzo Pace<sup>1</sup>, Valeria Rondinone<sup>1</sup>, Antonio Parisi<sup>1</sup>, Antonio Fasanella<sup>1</sup>,

Domenico Galante<sup>1</sup>

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2 - School of Pharmacy and Pharmaceutical Sciences, Cardiff University, Cardiff CF10 3NB (United Kingdom)

**(P.S.2.18) "Milano Cortina 2026": CBRN Prevention and Monitoring Apparatus Put in Place during the Winter Olympic Games.**

Fabrizio Gargano<sup>1</sup>, Damiano Zurlo<sup>1</sup>, Chiara Agrillo<sup>1</sup>, Achille Antenucci<sup>1</sup>

1 - Italian National Fire and Rescue Service (Italy)

**(P.S.2.19) Ab Initio Characterization of the Reactivity of Bis(2-Chloroethyl) Sulfide and 1,2-Bis(2-Chloroethylsulfanyl) Ethane with Azotate-Bases**

Sara Giachetti<sup>1</sup>, Federico Totti<sup>1</sup>

1 - Dipartimento di Chimica DICUS 'Ugo Schiff', Università degli Studi di Firenze (Italy)

**(P.S.2.20) Evaluation Tool to Assess Effectiveness of Response Agencies in Case of Chemical and Radiological Events.**

Andrea Gloria<sup>1</sup>, Federico Mancinelli<sup>2</sup>, Francesco Geri<sup>1</sup>, Alessandro Bucci<sup>1</sup>, Sabrina Rao<sup>1</sup>, Andrea Malizia<sup>2</sup>

1 - Department of Industrial Engineering, University of Rome Tor Vergata, Roma (Italy)

2 - Department of Biomedicine and Prevention, University of Rome Tor Vergata (Italy)

**(P.S.2.21) AI-Driven Evolution of CBRNe Threats and Challenges for Counterterrorism**

Guo Xiaodi<sup>1</sup>, Wu Di<sup>1</sup>, Su Hongyi<sup>1</sup>, Gao Xiaohui<sup>1</sup>, Zheng Yue<sup>1</sup>

1 - State Key Laboratory of NBC Protection for Civilians, Beijing (China)

**(P.S.2.22) Decontamination Robot Technology Utilizing Chemical Weapon Contamination Colorimetric Detection Spray and 3D Spatial Mapping**

Hyungjoo Kim<sup>1</sup>, Dong-Ha Kah<sup>1</sup>, Byeong-Hwang Park<sup>1</sup>, Heesoo Jung<sup>1</sup>, Younggun Cho<sup>1</sup>

1 - Agency for Defense Development, South Korea (Republic of Korea)



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**(P.S.2.23) Development and Optimization of a Chemical Warfare Agent Detection System Based on Mass Spectrometry**

Young-Jin Koh<sup>1</sup>, Jungho Lee<sup>1</sup>, Seryeyohan Cho<sup>1</sup>, Sang-Soo Han<sup>1</sup>, Young-Su Jeong<sup>1</sup>, Min-Kyung Lee<sup>1</sup>, Jongseon Kim<sup>1</sup>, Hyeyun Ku<sup>1</sup>, Hyunwoo Nam<sup>1</sup>, Hyunsoo Seo<sup>1</sup>, Jae Hwan Lee<sup>1</sup>

1 - Chem-Bio Technology Center, Agency for Defense Development, South Korea (Republic of Korea)

**(P.S.2.24) Computational Modeling of Radiological Signatures for Unknown Nuclear Materials Using Fission Product Decay Characteristics**

Gaye Betul Akdemir<sup>1,3</sup>, Yuksel Gungordu<sup>1,3</sup>, Neslihan Kulahlioglu<sup>2,3,4</sup>

1 - Department of Physics, Faculty of Science, Ankara University, Ankara (Türkiye)

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3 - CBRNE Defense, Health, Technology, and Innovation Research Group, Integrated Technologies Research Center (BUTAM), Ankara University, Ankara (Türkiye)

4 - Ankara University, Institute of Forensic Sciences, Department of Criminalistics, Ankara (Türkiye)

**(P.S.2.25) An Illuminating Chemical Detection Approach: Advanced Frontiers in Fluorescence-Based Chemosensors.**

Gea Cassandra Lassati<sup>1</sup>, Maurizio Fagnoni<sup>1,2</sup>

1 - University of Pavia, Pavia (Italy)

2 - University of Rome Tor Vergata, Department of Industrial Engineering, Via del Politecnico 1, 00133 Roma (Italy)

**(P.S.2.26) Test and Evaluation of Micro Chemical Sensor Systems on Ultra-Small UAV**

Jungho Lee<sup>1</sup>, Young-Jin Koh<sup>1</sup>, Seryeyohan Cho<sup>1</sup>, Jongseon Kim<sup>1</sup>, Min-Kyung Lee<sup>1</sup>, Sang-Soo Han<sup>1</sup>, Hyunwoo Nam<sup>1</sup>, Myung Kyu Park<sup>1</sup>, Byungheon Lee<sup>1</sup>, Young-Su Jeong<sup>1</sup>, Hyeyun Ku<sup>1</sup>, Yeonchul Ha<sup>1</sup>, Donghee Kang<sup>1</sup>, Jae Hwan Lee<sup>1</sup>, Sun Kyung Choi<sup>1</sup>

1 - Agency for Defense Development, Republic of Korea (Republic of Korea)

**(P.S.2.27) New Horizons in the Tactical Approach to CBRN Events. Analysis of the Developments Made Possible by New Technologies and the Importance of Greater Integration among Fire and Rescue Operators, Healthcare Services, Law Enforcement and Civil Society**

Fabrizio Malaspina<sup>1</sup>

1 - Department of Firefighters, Public Rescue and Civil Defence, Comando Provinciale VV.F. di Torino (Italy)

**(P.S.2.28) From Hazard to Risk: A GIS-Based Approach for Population Exposure Assessment in CBRNe Scenarios**

Federico Mancinelli<sup>1,4</sup>, Francesco Geri<sup>3</sup>, Andrea Gloria<sup>2</sup>, Sabrina Rao<sup>1,4</sup>, Alessandro Bucci<sup>2</sup>, Laura Zambelli<sup>1,4</sup>, Andrea Malizia<sup>1,4</sup>

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2 - Department of Industrial Engineering, University of Rome Tor Vergata, Rome (Italy)

3 - Italian Government Presidency of the Council of Ministers (Italy)

4 - Master CBRNe, University of Rome Tor Vergata (Italy)



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**(P.S.2.29) Full-Field Strain Analysis of 3D-Printed Structures for CBRNe Protective Equipment**  
**Aleksandra Mitrović<sup>1</sup>, Sara Petković<sup>1</sup>, Jelena Lamovec<sup>1</sup>**

*1 - Department of Forensic Engineering, Faculty of Forensic Sciences and Engineering, CBRNE Centre of Excellence, University of Criminal Investigation and Police Studies, Belgrade (Serbia)*

**(P.S.2.30) From Seveso to Modern Integrated CBRNe Preparedness: The Evolution of Risk Governance, Warning & Reporting and Interoperability**  
**Pasquale Pagliara<sup>1</sup>**

*1 - Master CBRNe - Department of Biomedicine and Prevention, University of Rome Tor Vergata, Rome (Italy)*

**(P.S.2.31) Operational Management of Orphan Radioactive Sources Outside Regulatory Control: Lessons Learned from the Italian National Fire and Rescue Service**  
**Vincenzo Petitto<sup>1</sup>**

*1 - Department of Firefighters, Public Rescue and Civil Defence, Ministry of Interior (Italy)*

**(P.S.2.32) Analysis and Optimization of Decontamination Processes within Fire Service Operations**

**Francesco Pilo<sup>1</sup>, Alessandro Zanetti<sup>1</sup>, Giovanni Battista Bolzon<sup>1</sup>**

*1 - Department of Firefighters, Public Rescue and Civil Defence, Ministry of Interior (Italy)*

**(P.S.2.33) Beyond the Crater: When Crime Scene Reconstruction Revealed the Dynamics of an Explosion**

**Martina Pisano<sup>1</sup>, Maria Cristina Pigro<sup>1</sup>, Alessandro Ruscitti<sup>1</sup>, Daniela Panetta<sup>1</sup>**

*1 - Department of Public Security, Central Directorate for the Forensic Science Police and the Cyber Security, Forensic Science Police Service, Rome (Italy)*

**(P.S.2.34) Emerging Technologies Supporting CBRN Defence: Artificial Intelligence and Autonomous Systems**

**Giuseppe Puscio<sup>1</sup>**

*1 - Master CBRNe - Department of Biomedicine and Prevention, University of Rome Tor Vergata, Rome (Italy)*

**(P.S.2.35) Beyond Tradition: Technological Evolution and New Design Approaches in the CBRN Civil Defence of the Italian National Fire and Rescue Service**

**Luca Muratore<sup>1</sup>, Silva Rossi<sup>1</sup>**

*1 - Department of Firefighters, Public Rescue and Civil Defence, Direzione Centrale per la Difesa Civile e le Attività di Protezione Civile - Ufficio di raccordo con le strutture del Corpo (Italy)*

**(P.S.2.36) Making Novichok Degradation Products Identifiable: Practical Derivatization of Amidines and Guanidines**

**Tomas Rozsypal<sup>1</sup>, Vladimir Finger<sup>2</sup>**

*1 - Nuclear, Biological and Chemical Defence Institute, University of Defence, Brno (Czech Republic)*

*2 - Military Faculty of Medicine, University of Defence, Hradec Kralove (Czech Republic)*



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**(P.S.2.37) Strengthening the Resilience of Critical Energy Infrastructure against the CBRNe Threats in Sierra Leone**

Mustapha Sannoh<sup>1</sup>

*1 - Master CBRNe - Department of Biomedicine and Prevention, University of Rome Tor Vergata, Rome (Italy)*

**(P.S.2.38) Forensic Genetics in CBRNe-Threatened Crime Scenes: A Case Report on Complex Evidence Recovery and Analysis.**

Santoro Maristella<sup>1</sup>, Nuzzo Sara<sup>1</sup>, Vernarecci Stefano<sup>1</sup>

*1 - Italian National Police, Forensic Science Police Service, V Division, Forensic Genetics Section, Ministry of Interior (Italy)*

**(P.S.2.39) Recovery of Viable Viruses from Air Samples to Assess Potential Airborne Exposure and Transmission Risk**

Seah Gek Kheng Shirley<sup>1</sup>, Lim Annabelle<sup>1</sup>, Chew Seok Wei Janet<sup>1</sup>, Tea Shi Jie<sup>1</sup>, Yeo Yen Ning Alethea<sup>1</sup>, Lim Jiali<sup>1</sup>

*1 - Human Systems Division, DSO National Laboratories, Singapore (Singapore)*

**(P.S.2.40) Use of Artificial Intelligence for the Identification of Emerging Bacterial Neurotoxins: Applications in CBRN Biological Surveillance and Risk Assessment**

Maribel Serrano<sup>1</sup>

*1 - CBRN Defence School, Spanish Ministry of Defence (Spain)*

**(P.S.2.41) Preliminary FT-IR/ATR Approach for the Semi-Quantitative Assessment of Fusarium oxysporum in an Aqueous Matrix on a PDMS Support**

Nicola Simone<sup>1</sup>, Piergianni Medaglia<sup>2</sup>, Federico Dalle Fave<sup>3</sup>, Andrea Malizia<sup>4</sup>, Pasquale Gaudio<sup>2</sup>

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*3 - Department of Business Engineering - University of Rome Tor Vergata, Rome (Italy)*

*4 - Department of Biomedicine and Prevention - University of Rome Tor Vergata, Rome (Italy)*

**(P.S.2.42) Decontamination of Water Containing Acid Violet 109: A Comparative Study of Direct and Indirect Electrochemical Oxidation**

Nemanja Vučković<sup>1</sup>, Nikola Milašinović<sup>1</sup>, Jelena Dikić<sup>2</sup>, Milan Tanić<sup>3</sup>, Dušan Mijin<sup>4</sup>, Stevan Stupar<sup>1</sup>

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*3 - The Academy of Applied Preschool Teaching and Health Studies, Department of Technical and Technological Studies Kruševac, Kruševac (Serbia)*

*4 - University of Belgrade, Faculty of Technology and Metallurgy, Belgrade (Serbia)*

**(P.S.2.43) Machine-Learning Assessment of Nuclear Material Position and Amount Level Using a Compact 252Cf-Based System for On-Site Nondestructive Assay**

Kosuke Tanabe<sup>1</sup>, Masao Komeda<sup>2</sup>, Yosuke Toh<sup>2</sup>, Yasunori Kitamura<sup>3</sup>, Yoshiyuki Takahashi<sup>3</sup>, Ken'ichi Tsuchiya<sup>4</sup>

*1 - Physics Section, National Research Institute of Police Science (Japan)*

*2 - Nuclear Science and Engineering Center, Japan Atomic Energy Agency (Japan)*

*3 - Institute for Integrated Radiation and Nuclear Science, Kyoto University (Japan)*

*4 - Artificial Intelligence Section, National Research Institute of Police Science (Japan)*



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**(P.S.2.44) The Role of Rapid DNA Technology in Counterterrorism Investigations: Applications and Operational Advantages**

Francesca Senes<sup>1</sup>, Iolanda Iodice<sup>1</sup>, Rosaria Casolaro<sup>1</sup>, Daniela Pellegrini<sup>1</sup>, Stefano Vernarecci<sup>1</sup>

*1 - Italian National Police, Forensic Science Police Service, V Division, Forensic Genetics Section, Ministry of Interior (Italy)*

**(P.S.2.45) Operational Use of Weather Radar for Detection and Tracking of Smoke Plumes Generated by Petrochemical Accidents: A Simulated Case Study in the Syracuse Industrial Area (Italy)**

Gianfranco Vulpiani<sup>1</sup>, Giovanni Valgimigli<sup>1</sup>, Luca Delli Passeri<sup>1</sup>

*1 - Department of Civil Protection, Presidency of the Council of Ministers (Italy)*

**(P.S.2.46) The Construction of Regional CBRNe Technical Support System**

Wu Di Wu<sup>1</sup>, Zheng Yue<sup>1</sup>, Gao Xiaohui<sup>1</sup>, Su Hongyi<sup>1</sup>, Guo Xiaodi<sup>1</sup>

*1 - State Key Laboratory of NBC Protection for Civilians, Beijing (China)*

**(P.S.2.47) Multi-Layer Portable Gamma Spectrometric Systems for Nuclear and Radiological Emergency Response**

Gabriele Zorloni<sup>1</sup>

*1 - ELSE NUCLEAR S.r.l., Busto Arsizio (Italy)*

**(P.S.2.48) Field Validation of Standoff DIAL Identification Across CWA Simulants and TICs**

Ivana Drobanova<sup>1</sup>, Daniel Mrena<sup>1</sup>

*1 - SEC Technologies (Slovakia)*

**(P.S.2.49) When the Agent Is No Longer Detectable: The Role of Host-Response Biomarkers in Chemical and Biological Exposure Assessment**

Gaia Di Timoteo<sup>1</sup>, Elisabetta Galati<sup>1,2</sup>, Alba Fagnani<sup>1,2</sup>, Radovan Karkalic<sup>3</sup>

*1 - Master CBRNe - Department of Biomedicine and Prevention, University of Rome Tor Vergata, Roma (Italy)*

*2 - Italian Navy, Ministry of Defence (Italy)*

*3 - Military Academy University of Defence (Serbia)*

**(P.S.2.50) Improving Emergency Response for Fragile Populations: Risk Analysis of a Hypothetical SMR at the Former Latina Nuclear Site**

Grace P. Xerri<sup>1,2</sup>, Riccardo Quaranta<sup>2,3</sup>, Marco Carbonelli<sup>4</sup>, Gian Marco Ludovici<sup>2</sup>, Federico Mancinelli<sup>2,5</sup>, Andrea Malizia<sup>2,5</sup>, Pasquale Gaudio<sup>1,2</sup>

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## 7. IMLEX – Integrated Multi-Layer Exercise



An official IMLEX – Integrated Multi-Layer Exercise will be conducted during the SICC Series – CBRNe Conference 2026 as part of the advanced preparedness and training activities of the event. All registered participants will have the opportunity to actively take part in this innovative integrated exercise, designed to combine strategic decision-making, operational coordination and selected field activities within realistic and evolving CBRNe scenarios. The increasing complexity of modern CBRNe threats, characterized by multidomain interactions, hybrid risks and rapidly evolving information environments, requires advanced training methodologies capable of integrating coordination, operational response and emerging technologies in dynamic settings. In this context, IMLEX has been developed as an advanced hybrid methodology bridging the gap between traditional Tabletop Exercises (TTX), which are primarily discussion-based, and Full-Scale Exercises (FSE), which are highly resource-intensive, by combining their respective strengths in a more flexible and efficient framework. The IMLEX architecture integrates strategic and policy-level decision-making processes, operational coordination, selected field components, digital simulations, Decision Support Systems (DSS), artificial intelligence-enabled tools, Geographic Information Systems (GIS) and plume modelling, integration of unmanned systems (UAV/UGV), and multi-agency interoperability within a single comprehensive CBRNe scenario. Unlike conventional exercises, IMLEX introduces dynamic scenario injects and realistic operational elements that enhance situational awareness, communication, interoperability and adaptive decision-making, while maintaining reduced organizational complexity compared to full-scale deployments. The methodology operates simultaneously at strategic, operational and tactical levels, enabling participants to experience the full spectrum of crisis evolution, from early decision-making to coordinated response in complex multidomain environments. IMLEX is



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particularly suited for CBRNe preparedness and resilience, civil–military cooperation, crisis management, healthcare emergency preparedness, critical infrastructure protection, hybrid threat response and international interoperability activities. The IMLEX concept has been ideated and developed by HESAR s.r.l.s. in the framework of advanced education, research, innovation and international training initiatives linked to the International Master Courses in Protection against CBRNe Events and the SICC Series – CBRNe Conference, representing a next-generation approach to integrated CBRNe preparedness and training.



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## 8. CBRNe SCHOOL

The CBRNe School is an advanced training initiative organized within the framework of the Conference with the objective of strengthening practical knowledge, technical awareness and operational familiarity with modern CBRNe technologies, equipment and response procedures across preparedness, prevention, response, mitigation and recovery phases. The programme is structured over two complementary training days combining operational lectures, live demonstrations and intensive hands-on activities. Day 1 will take place at the National Fire Academy (Istituto Superiore Antincendi – ISA) on Tuesday 29 September 2026 in the afternoon and will focus on the operational presentation of advanced CBRNe technologies, systems and equipment, with highly practical lectures delivered by industry experts supported by live demonstrations, technical briefings, real-world case studies and application scenarios covering detection and monitoring instruments, Personal Protective Equipment (PPE), hazardous materials response technologies, radiological and nuclear detection systems, chemical and biological monitoring solutions, emergency management tools and advanced operational decision-support systems, with a strong emphasis on field applicability, interoperability and real operational contexts rather than purely theoretical approaches. Day 2 will take place on Saturday 3 October 2026 at the Faculty of Medicine and Surgery of the University of Rome Tor Vergata and will consist of a fully immersive practical training programme where participants, divided into rotating operational groups, will engage directly with instruments, technologies, protective systems and specialized equipment through dedicated laboratory environments assigned to participating companies, rotating approximately every 90 minutes across multiple stations involving hands-on interaction with detection technologies, operational equipment, Personal Protective Equipment (PPE), procedures and field-oriented demonstrations. The overarching objective of the School is to provide participants with direct operational experience and practical familiarity with technologies currently adopted in CBRNe activities, while strengthening cooperation between industry, operational agencies, academia, healthcare systems and institutional stakeholders, and promoting advanced training, technological innovation and operational readiness in complex CBRNe scenarios.



## OFFICIAL PROGRAMME

### SICC SERIES OPERATIONAL CBRNe SCHOOL

*Advanced Hands-On Training on CBRNe Technologies, Equipment and Operational Response*

### About the School

The SICC Series Operational CBRNe School is an advanced operational training initiative organised within SICC Series 2026 to strengthen practical knowledge, technical awareness and operational familiarity with modern CBRNe technologies, equipment, instruments, protective systems and response procedures. The School creates direct interaction among industry and technological partners, operational end-users, first responders, healthcare professionals, civil protection personnel, researchers, academia and institutional stakeholders.

The programme is structured into two complementary training days. Day 1 provides operationally oriented technology presentations and demonstrations. Day 2 is entirely dedicated to practical training: participants will be divided into six groups and will rotate through six dedicated University rooms, each assigned to one participating company. This rotation ensures that every participant has direct contact with all six companies and can test, handle, observe or apply the technologies and procedures presented during the School.

### Training Structure

| Day                                                                | Date & Venue                                                                                                                                              | Format                                                                                   |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Day 1 – Operational Technologies and Practical Response Approaches | Tuesday, 29 September 2026<br>National Fire Academy (ISA)<br>Room 22 “Tosi Beleffi”                                                                       | Seven companies – 30 minutes per company<br>Operational presentations and demonstrations |
| Day 2 – Hands-On Operational Laboratories                          | Saturday, 3 October 2026<br>University of Rome Tor Vergata<br>Faculty of Medicine and Surgery<br>Meeting Point: Room Fleming,<br>Building B, Ground Floor | Six companies – six rotating groups<br>50-minute practical laboratory slots              |

### Main Training Areas

- Chemical detection, identification and decontamination
- Radiological and nuclear detection, monitoring and field identification
- Personal Protective Equipment (PPE) and respiratory protection
- Multi-hazard CBRNe screening and critical-infrastructure protection
- Operational instrumentation, field response and decision-support technologies



## DAY 1 – Operational Technologies and Practical Response Approaches

**Tuesday, 29 September 2026 | National Fire Academy (Istituto Superiore Antincendi – ISA)**

*Room 22 “Tosi Beleffi” | Afternoon Session – 3.00 p.m. – 8.00 p.m.*

### **Session Moderators:**

**Dr. Alessandro Puleio and Dr. Luca Martellucci**

*Department of Industrial Engineering, University of Rome Tor Vergata.*

| Time                  | Company / Activity                                       | Operational Presentation                                                                                          |
|-----------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 3:45 p.m. – 4:00 p.m. | Welcome Addresses – SICC Series Operational CBRNe School |                                                                                                                   |
| 4:00 p.m. – 4:30 p.m. | SERB Pharmaceuticals                                     | From Exposure to Action: RSDL® in Operational CBRN Response                                                       |
| 4:30 p.m. – 5:00 p.m. | LARIMART / D.P.I.                                        | DIABLO Self-Contained Breathing Apparatus: Advanced Respiratory Protection for Fire, Rescue and CBRNe Operations  |
| 5:00 p.m. – 5:15 p.m. | Coffee Break / Industrial Exhibition                     |                                                                                                                   |
| 5:15 p.m. – 5:45 p.m. | ELSE NUCLEAR                                             | Portable Gamma Measurement Systems for RN Emergency Response                                                      |
| 5:45 p.m. – 6:15 p.m. | CAEN SyS                                                 | First and Second Level Radiological Inspection: From Area Search to Point Identification in Operational Scenarios |
| 6:15 p.m. – 6:45 p.m. | ANTON PAAR                                               | From Unknown Samples to Operational Decision: Raman and FTIR for CBRNe Response                                   |
| 6:45 p.m. – 7:15 p.m. | B.M.D.                                                   | Beyond the Military Front: CBRNe Threats in the Civilian World and Mail Screening with Check Ma.Te.               |
| 7:15 p.m. – 7:45 p.m. | METROHM                                                  | Safe Operations with Metrohm Spectro                                                                              |

### Day 1 Speakers

| Company              | Speaker(s)                                                             |
|----------------------|------------------------------------------------------------------------|
| SERB Pharmaceuticals | Riccardo Graziani; Silvia Muccioli; Josep Font Redondo; Laura Cochrane |
| LARIMART / D.P.I.    | Ing. Federica Morgia                                                   |
| ELSE NUCLEAR         | Gabriele Zorloni; Giuliano Mini                                        |
| CAEN SyS             | Giacomo Mangiagalli                                                    |
| ANTON PAAR           | Dr. Hendrik Schulze                                                    |
| B.M.D.               | Giorgio Carcano                                                        |
| METROHM              | Andrea Cipolla                                                         |

The Day 1 educational approach privileges operational applicability, field experience, interoperability and practical implementation. Presentations may include live demonstrations, case studies, videos and application scenarios, preparing participants for the practical activities of Day 2.

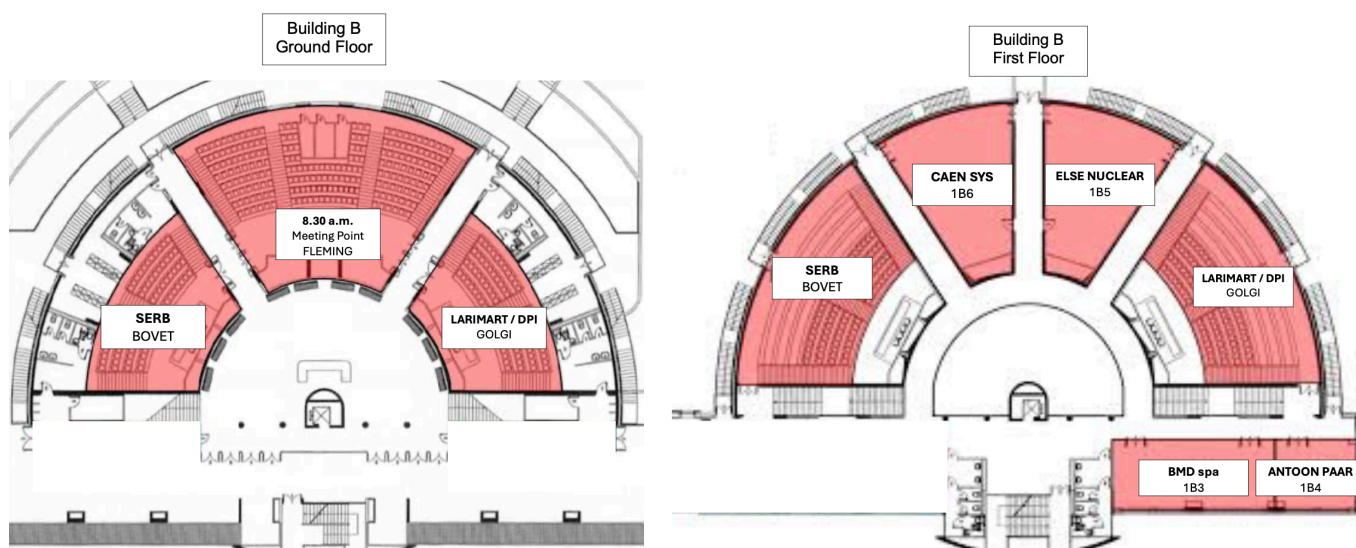
## DAY 2 – Hands-On Operational Laboratories

**Saturday, 3 October 2026 | Faculty of Medicine and Surgery – University of Rome Tor Vergata**

*Meeting Point: Aula Fleming, Building B, Ground Floor, Via Montpellier 1 – 00133 Rome; 8.30 a.m. – 5.00 p.m.*

Participants will be divided into six operational groups. Each company will operate from a dedicated University room, while the six participant groups rotate from room to room. During each 50-minute slot, participants will work directly with the company trainers, instruments, equipment, PPE, systems and operational procedures. By the end of the six rotations, every group will have completed one practical session with each participating company.

| Time                    | Activity                                             |
|-------------------------|------------------------------------------------------|
| 8:30 a.m. – 9:00 a.m.   | Welcome Addresses, registration and group assignment |
| 9:00 a.m. – 9:50 a.m.   | SLOT 1 – Hands-On CBRNe Technologies                 |
| 10:00 a.m. – 10:50 a.m. | SLOT 2 – Hands-On CBRNe Technologies                 |
| 11:00 a.m. – 11:50 a.m. | SLOT 3 – Hands-On CBRNe Technologies                 |
| 12:00 p.m. – 12:50 p.m. | SLOT 4 – Hands-On CBRNe Technologies                 |
| 1:00 p.m. – 1:50 p.m.   | Break                                                |
| 2:00 p.m. – 2:50 p.m.   | SLOT 5 – Hands-On CBRNe Technologies                 |
| 3:00 p.m. – 3:50 p.m.   | SLOT 6 – Hands-On CBRNe Technologies                 |
| 4:00 p.m. – 5:00 p.m.   | CBRNe School Diploma Ceremony and Closing Remarks    |



### Six-Group Rotation Scheme

| Rotation | Group 1      | Group 2      | Group 3      | Group 4      | Group 5      | Group 6      |
|----------|--------------|--------------|--------------|--------------|--------------|--------------|
| Slot 1   | SERB         | LARIMART     | ELSE NUCLEAR | CAEN         | ANTON PAAR   | B.M.D.       |
| Slot 2   | LARIMART     | ELSE NUCLEAR | CAEN         | ANTON PAAR   | B.M.D.       | SERB         |
| Slot 3   | ELSE NUCLEAR | CAEN         | ANTON PAAR   | B.M.D.       | SERB         | LARIMART     |
| Slot 4   | CAEN         | ANTON PAAR   | B.M.D.       | SERB         | LARIMART     | ELSE NUCLEAR |
| Slot 5   | ANTON PAAR   | B.M.D.       | SERB         | LARIMART     | ELSE NUCLEAR | CAEN         |
| Slot 6   | B.M.D.       | SERB         | LARIMART     | ELSE NUCLEAR | CAEN         | ANTON PAAR   |

**Important:** Metrohm participates only in Day 1 (Tuesday, 29 September) and is not included in the Saturday hands-on rotation.



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## DAY 2 – Company Hands-On Laboratories

### SERB Pharmaceuticals – Room “BOVET”

- **Laboratory:** RSDL® Hands-on Training: From Exposure to Action
- **Trainers:** Riccardo Graziani; Silvia Muccioli
- **Main area:** Chemical / skin decontamination

Participants will practise the IDENTIFY – OPEN – WIPE – RINSE sequence using non-active RSDL® training devices, mannequins or artificial skin surfaces and training PPE. Simulated scenarios include pesticide exposure, suspected nerve-agent contamination and Fire & Rescue HazMat response.

### LARIMART / D.P.I. – Room “GOLGI”

- **Laboratory:** Hands-On Station: Donning, Functional Check and Operational Use of the DIABLO SCBA
- **Trainers:** Ing. Federica Morgia
- **Main area:** Respiratory PPE / multi-hazard response

Participants will directly handle and wear the DIABLO self-contained breathing apparatus, focusing on donning, functional checks, positive-pressure operation and key procedures relevant to fire, HazMat and CBRNe response.

### CAEN SyS - ROOM “1B6”

- **Laboratory:** First and Second Level Radiological Inspection in Practice: Search, Localisation and Identification of Hidden Sources
- **Trainers:** Giacomo Mangiagalli; Michele Mignogna; Carlo Uguccioni (to be confirmed)
- **Main area:** Radiological and Nuclear

Participants will apply a two-level radiological inspection approach using backpack and handheld radionuclide identification technologies, moving from area search and localisation to point identification, alarm assessment and operational decision support.



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## ELSE NUCLEAR – ROOM “1B5”

- **Laboratory:** Portable Gamma Measurement Systems for RN Emergency Response: Hands On
- **Trainers:** Gabriele Zorloni; Giuliano Mini
- **Main area:** Radiological and Nuclear

Participants will work with portable gamma measurement systems for emergency response, examining hardware and software, configuring measurement parameters, performing calibration/background acquisition and example measurements, and critically interpreting field results.

## ANTON PAAR- ROOM “1B4”

- **Laboratory:** Spectrometer Solutions for Aerospace, Space, and Defense
- **Trainers:** Marco Cimolino; Bettina Hoefer
- **Main area:** Chemical identification / Raman and FTIR

Participants will gain direct experience with Raman and FTIR spectroscopy for material characterisation and non-destructive in-situ detection, comparing complementary analytical approaches for unknown-substance identification in CBRNe-relevant contexts.

## B.M.D. s.p.a. - ROOM “1B3”

- **Laboratory:** Multi-Channel Mail Screening in Practice: Automated Bioaerosol Detection with Check Ma.Te. HS, plus Chemical Detection with MX908 and ChemSense Protect
- **Trainers:** Luca Pinciarelli (with B.M.D. technical staff)
- **Main area:** Multi-hazard CBRNe screening

Participants will operate an automated mail-screening workflow using harmless simulants and will interact with separate chemical-detection instruments. The practical session demonstrates automated bioaerosol alarm logic, parcel isolation and complementary chemical threat detection for sensitive sites and critical infrastructures.

## Training Outcome

The SICC Series Operational CBRNe School is designed to connect technology knowledge with practical use. Through the combination of Day 1 operational presentations and Day 2 rotating laboratories, participants will gain direct exposure to industrial partners and practical familiarity with current technologies supporting CBRNe preparedness, prevention, response, mitigation and recovery. At the conclusion of the School, participants will attend the CBRNe School Diploma Ceremony and Closing Remarks from 4:00 p.m. to 5:00 p.m. on Saturday, 3 October 2026 in Room Fleming.

## 9. LIVE SHOWCASES

28 September – 2 October 2026 | National Fire Academy (ISA), Rome

### LIVE DEMONSTRATIONS • REAL TECHNOLOGIES • OPERATIONAL SOLUTIONS

The SICC Series Live Showcases provide conference participants with a direct view of CBRNe technologies, equipment, systems, procedures and operational capabilities through short, dynamic and practical demonstrations integrated into the conference programme.

### Programme at a Glance

| Day        | Featured Showcase                      | Continuous Operational Displays                                                                                                            |
|------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Mon 28 Sep | 2:15–2:45 p.m. • SERB Pharmaceuticals  | 2:00 - 3:00 p.m. • Italian National Fire and Rescue Service rescEU CBRN-DSIM-IT • Italian Red Cross Military Corps decontamination station |
| Tue 29 Sep | 3:15–3:45 p.m. • LARIMART / D.P.I.     | 2:00 - 3:30 p.m. • Italian National Fire and Rescue Service rescEU CBRN-DSIM-IT • Italian Red Cross Military Corps decontamination station |
| Wed 30 Sep | 3:15–3:45 p.m. • HEYL Berlin           | 2:00 - 3:30 p.m. • Italian National Fire and Rescue Service rescEU CBRN-DSIM-IT • Italian Red Cross Military Corps decontamination station |
| Thu 1 Oct  | 2:25–2:45 p.m. • ENEA                  | 2:00 - 2:45 p.m. • Italian National Fire and Rescue Service rescEU CBRN-DSIM-IT • Italian Red Cross Military Corps decontamination station |
| Fri 2 Oct  | No separate sponsor showcase scheduled | 1:00 - 2:00 p.m. • Italian National Fire and Rescue Service rescEU CBRN-DSIM-IT • Italian Red Cross Military Corps decontamination station |

Featured Showcase times follow the official conference scheme. The Fire and Rescue Service mobile laboratories and the Italian Red Cross Military Corps decontamination station are integrated as operational displays throughout the conference days

MONDAY  
28 SEPTEMBER

2:15–2:45 p.m.

SERB PHARMACEUTICALS

## When Every Second Matters: Rapid Skin Decontamination Following Chemical Agent Exposure

### Presenter(s) / Demonstrator(s)

Riccardo Graziani, Sales Manager Italy; Silvia Muccioli, Product / Project Manager Italy

### Technology / Equipment / Capability

RSDL® – Rapid Skin Decontamination for Chemical Exposure

### CBRNe Area

Chemical Risk

This live showcase presents the operational principles of rapid post-exposure skin decontamination in a simulated CBRN response scenario. After a concise introduction to the role of skin decontamination in limiting continued dermal exposure and secondary contamination, participants will observe RSDL® and its application sequence in an operational context.

### WHAT PARTICIPANTS WILL SEE

A responder wearing training protective equipment will perform a simulated response to suspected skin contamination using a non-active RSDL® training device. The demonstration covers recognition of possible contamination, rapid device access and the IDENTIFY – OPEN – WIPE – RINSE sequence, including glove handling, systematic application and measures to minimise secondary transfer.

**Main operational application:** Rapid post-exposure skin decontamination following suspected chemical-agent exposure within CBRN emergency response.

**Estimated duration:** 30 minutes

**Safety:** No hazardous substances, active chemical agents or hazardous simulants will be used; only non-active training devices and training PPE are involved.

### ALSO AVAILABLE DURING THE DAY

CBRNe Mobile Laboratories – Italian National Fire and Rescue Service (rescEU CBRN-DSIM-IT) • Italian Red Cross Military Corps Decontamination Station.

TUESDAY  
29 SEPTEMBER

3:15–3:45 p.m.

LARIMART S.p.A. / D.P.I. S.r.l.

## DIABLO SCBA Live Demonstration: Respiratory Protection in Action

|                                     |                                                                                                                                             |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Presenter(s) / Demonstrator(s)      | Ing. Federica Morgia                                                                                                                        |
| Technology / Equipment / Capability | DIABLO open-circuit self-contained breathing apparatus (SCBA), EN 137 certified, with C2000 balanced pressure reducer and E400 demand valve |
| CBRNe Area                          | Multi-hazard / Cross-cutting – respiratory protection for fire, hazmat and CBRN response                                                    |

The DIABLO self-contained breathing apparatus, manufactured by D.P.I. S.r.l., is an open-circuit SCBA certified to EN 137 and available in a flashover-tested Type 2 version for demanding fire-fighting scenarios. The showcase focuses on practical first-responder use and the critical operational checks required before entry into an IDLH atmosphere.

### WHAT PARTICIPANTS WILL SEE

Live donning and activation of the DIABLO SCBA, including mask fit-check, transition to positive pressure on first breath, explanation of the pressure-reducer function and demonstration of the low-air audible warning device.

**Main operational application:** Respiratory protection for first responders in structural fire-fighting, hazmat/CBRN response and confined-space operations.

**Estimated duration:** 10–15 minutes; demonstration can be repeated

**Safety:** Conducted by trained company staff; visitor safety perimeter maintained; no hazardous materials or live agents involved.

### ALSO AVAILABLE DURING THE DAY

CBRNe Mobile Laboratories – Italian National Fire and Rescue Service (rescEU CBRN-DSIM-IT) • Italian Red Cross Military Corps Decontamination Station.

WEDNESDAY  
30 SEPTEMBER

3:15–3:45 p.m.

HEYL BERLIN

## Strategic Stockpiling: Ensuring Readiness for CBRN Incidents

**Presenter(s) / Demonstrator(s)**

Dr. Marta Slimak-Mastrobuoni, Sales Manager at HEYL Berlin

**Technology / Equipment / Capability**

Operational presentation of CBRN stockpiling strategies

**CBRNe Area**

Chemical / Biological / Radiological / Nuclear / Explosive / Multi-hazard / CBRN stockpiling

HEYL's presentation highlights the importance of strategic stockpiling and preparedness for CBRN incidents. Drawing on lessons from major emergencies and current security challenges, it examines how governments and health authorities can strengthen resilience through risk assessment, emergency planning, logistics coordination and access to critical medical countermeasures. Practical case studies and scenario planning illustrate how geographic distribution, cross-border cooperation and regular replenishment can improve operational readiness.

### WHAT PARTICIPANTS WILL SEE

A focused operational presentation on strategic stockpiling, including preparedness concepts, resource positioning, logistics, continuity of supply and medical-countermeasure availability during large-scale CBRN crises.

**Main operational application:** CBRN stockpiling strategies and preparedness planning.

**Estimated duration:** 20 minutes

**Safety:** No specific safety requirements.

### ALSO AVAILABLE DURING THE DAY

CBRNe Mobile Laboratories – Italian National Fire and Rescue Service (rescEU CBRN-DSIM-IT) • Italian Red Cross Military Corps Decontamination Station.

THURSDAY  
1 OCTOBER

2:25–2:45 p.m.

ENEA

## Detection of Toxic Industrial Chemical Compounds by ENEA Laser Photoacoustic Spectroscopy (LPAS)

**Presenter(s) / Demonstrator(s)**

Antonia Lai, Senior Researcher, ENEA

**Technology / Equipment / Capability**

ENEA home-built Laser Photoacoustic Spectroscopy (LPAS) sensor for rapid, reliable and on-site screening

**CBRNe Area**

Chemical

The live showcase demonstrates ENEA LPAS technology for rapid detection of hazardous chemical contaminants. The activity addresses water-soluble contaminants and chemical additives released into ecosystems or drinking-water resources after intentional or accidental events, as well as organophosphate compounds using a safe simulant of nerve agent in water and on surfaces sampled by swab.

### WHAT PARTICIPANTS WILL SEE

The complete LPAS detection workflow: sample handling, photoacoustic measurement and detection of selected chemical compounds in water and on surfaces. The system was developed and validated during the EDF project MOSAIC.

**Main operational application:** Detection and monitoring of chemical threats and hazardous contamination in support of early assessment and emergency response.

**Estimated duration:** Programme slot: 20 minutes; submitted demonstration duration: 30 minutes

**Safety:** No toxic chemicals will be used during the showcase.

### ALSO AVAILABLE DURING THE DAY

CBRNe Mobile Laboratories – Italian National Fire and Rescue Service (rescEU CBRN-DSIM-IT) • Italian Red Cross Military Corps Decontamination Station.

## Continuous Operational Showcases | 28 September – 2 October

### Italian National Fire and Rescue Service – rescEU CBRN-DSIM-IT

The rescEU CBRN-DSIM-IT capacity demonstrates rapid mobilisation and on-site management of complex CBRN scenarios under the EU Civil Protection Mechanism. The integrated fleet combines advanced CBRN detection, real-time plume modelling and telemetry, digital decontamination control, and Command & Control situational awareness.

#### OPERATIONAL CAPABILITIES ON DISPLAY

DSM Command / Sampling & Detection • ChemLab • BioLab • N2R Lab • DECO mass decontamination • SANI medical support • LOG logistics • DORM life support. The operational configuration illustrates tactical C2, field sampling, rapid on-site analysis, mass decontamination, contamination containment and multi-asset coordination.

Demonstrators: Dr. Eng. Edoardo Cavalieri d'Oro, Team Leader rescEU capacity; Dr. Eng. Claudio De Maio, Deputy Team Leader rescEU capacity.

All CBRN demonstrations use inert surrogates. The submitted full fleet showcase is designed for an outdoor operational area and is modular, allowing the deployment footprint to be adapted to site constraints.

### Italian Red Cross Military Corps – Decontamination Station

The Italian Red Cross Military Corps (Corpo Militare Volontario) will maintain an operational decontamination tent display during the conference. Personnel will explain the station setup and its functioning, providing participants with direct insight into field decontamination organisation and procedures.

#### FIELD DISPLAY

Decontamination tent and associated operational explanation. The submitted logistical requirement indicates a minimum deployment area of approximately 20 m × 10 m, plus perimeter space for personnel and visitor circulation, with access for the material transport container.

The Italian Red Cross Military Corps documentation confirms personnel coverage throughout the conference period, supporting the continuous operational presence of the decontamination station.

### Practical Information

Venue: National Fire Academy – Istituto Superiore Antincendi (ISA), Rome, Italy. Featured sponsor/ENEA showcases are integrated into the Industrial Exhibition and conference breaks according to the official daily scheme. Continuous operational displays are accessible during the conference programme, subject to operational and safety instructions on site.

Programme note: timings and activities are based on the official conference scheme and the showcase information forms submitted by participating organisations. Operational details may be adapted on site for safety, logistics or programme requirements.

## 10. INDUSTRIAL EXHIBITION

The **SICC Series CBRNe Conference 2026 Industrial Exhibition** brings together leading companies and organisations providing advanced technologies, equipment, medical countermeasures and operational solutions for the CBRNe sector. The exhibition creates a unique environment where industry, institutions, researchers and first responders can meet, exchange expertise and explore innovative solutions for preparedness, prevention, protection and response.

**Abu Dhabi Civil Defence Authority – ADCDA (United Arab Emirates)**  
Diamond Sponsor of the Conference, ADCDA represents a key institutional partner in civil defence, emergency preparedness and response, supporting international cooperation and the exchange of operational expertise in the CBRNe field.

**University of Rome Tor Vergata – International Master Courses in Protection Against CBRNe Events (Italy)**

Platinum Sponsor and academic partner, providing advanced education, multidisciplinary training, research and international cooperation in CBRNe safety, security and emergency management.

**THALES (Italy)**

Gold Sponsor and global technology company developing advanced solutions for defence, security, aerospace and digital technologies, with capabilities supporting complex operational environments and critical infrastructure protection.

**HESAR (Italy)**

Gold Sponsor supporting technological innovation, safety and security initiatives and the development of international cooperation between academia, industry and operational stakeholders.

**HEYL (Germany)**

Silver Sponsor specialising in pharmaceutical products and medical countermeasures, including solutions relevant to the treatment and management of radiological and nuclear contamination.

**LARIMART / DPI (Italy)**

Silver Sponsor providing technologies, equipment and personal protective solutions designed to support operators working in hazardous and complex CBRNe environments.

**SERB Pharmaceuticals**

Silver Sponsor specialising in emergency medicines, antidotes and medical countermeasures for rare and life-threatening conditions, including preparedness and response to chemical, biological, radiological and nuclear threats.

The bronze sponsors are:

- Anton Paar
- BMD – Safety Systems and Technologies
- CAEN SyS – Spectroscopy Division
- CRISTANINI
- ELSE Nuclear
- Metrohm Italiana S.R.L.
- Rigaku
- SEC Technologies

Through the Industrial Exhibition, the SICC Series promotes direct interaction between **technology providers and end-users**, encouraging new partnerships, operational demonstrations, knowledge exchange and the development of innovative solutions for a safer and more resilient world.

## 11. PAPER PUBLICATION

The scientific research produced for the SICC Series CBRNe Conference 2026 is being supported by indexed journals.

- The papers and oral presentations of the 3 plenary sessions, 12 technical sessions, and poster sessions will be eligible for consideration for publication.
- Presenting authors have the opportunity to submit a full paper after the conference.
- The submission deadline is December 1st, 2026.

The special issue which will publish the work of the SICC 2026 conference will be hosted by EPJ PLUS on the new permanent section: "Radiation Physics and CBRNe Science"

The publication is included in the registration costs.

Submit your abstract here: <https://www.sicc-series.com/abstract-submission-1/>

### THE EUROPEAN PHYSICAL JOURNAL PLUS [SPRINGER]



The European Physical Journal



The organizers of the SICC Series – CBRNe Conference 2026 are pleased to announce that scientific papers presented during the conference will be published in the international journal **The European Physical Journal Plus (EPJ Plus)**.

Accepted contributions will be included in the new permanent journal section "**Radiation Physics and CBRNe Science**".

This section has been established to provide a dedicated scientific platform where radiation physics and CBRNe science are integrated as complementary domains addressing the challenges of chemical, biological, radiological, nuclear and explosive risks.

*Indexed on: SCOPUS, ISI WEB of SCIENCE, ANVUR, Astrophysics Data System (ADS), BFI List, Baidu, Chemical Abstracts Service (CAS), China National Knowledge Infrastructure (CNKI), China National Publications Import & Export Corporation (CNPIEC), CLOCKSS, Current Contents / Physical, Chemical and Earth Sciences, Dimensions, EBSCO, Google Scholar, INIS Atomindex, INSPEC, INSPIRE, Japanese Science and Technology Agency (JST), Naver, Norwegian Register for Scientific Journals and Series, OCLC WorldCat Discovery Service, Portico, ProQuest, SCImago, Science Citation Index Expanded (SCIE), TD Net Discovery Service, Wanfang, eLibrary.ru*

Impact Factor (2024): **2.9**

Importantly, publication costs are included in the conference registration fee, providing participants with the opportunity to disseminate their research within a high-impact international scientific journal.

The section is coordinated by an international editorial board including experts from leading institutions such as the Italian National Institute of Health (ISS), University of Rome Tor Vergata, University of Naples, ISPRA, Yale University, German Aerospace Center (DLR), University of Adelaide, University of Pisa, Universidade Federal de Sergipe, and the University of Criminal Investigation and Police Studies.

## 12. CONFERENCE VENUE

### National Fire Academy (Istituto Superiore Antincendi - ISA)

Via del Commercio 13, 00154 Rome, Italy

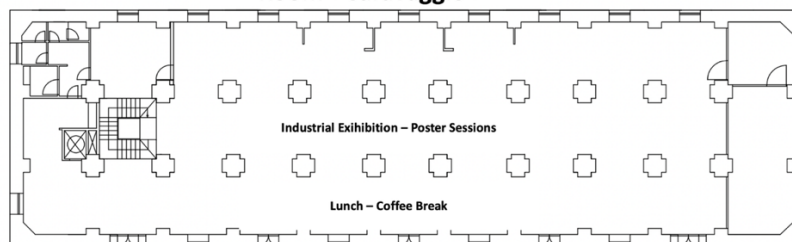


The area of the ISA is covered by a series of warehouses built between the end of the XIX century and the beginning of the XX century, designed to host the industrial and commercial activities flourishing at that time in Rome, new capital city of Italy (1870). The structure, planned by Mr. Tullio Passarelli, opened in 1912, represents one of the first reinforced concrete structures built in Rome, based on impressive metallic structures.

#### Building F

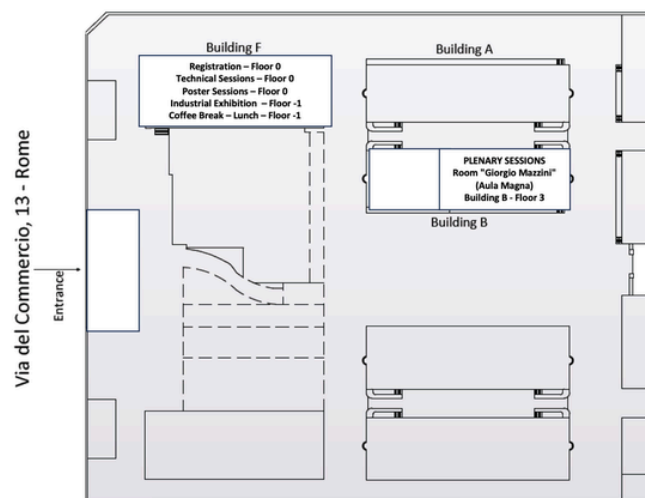
#### FLOOR -1

#### Room «Caravaggio»

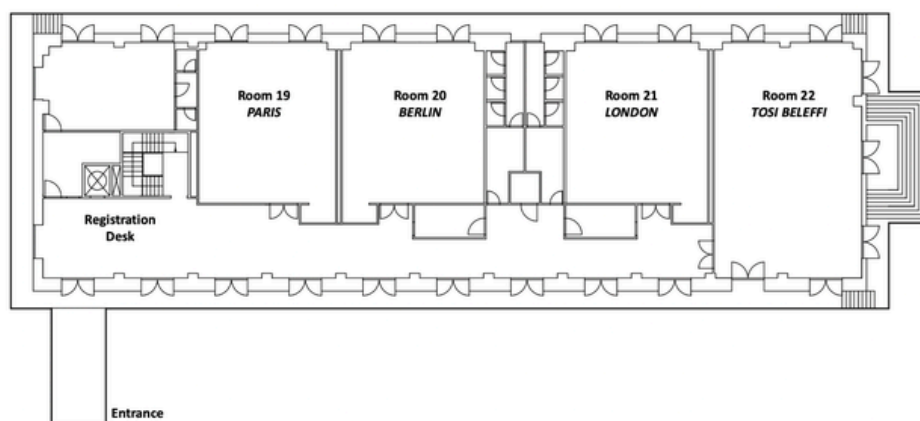


Such structures reached the river Tiber, where food and goods were unloaded from boats and sorted into several warehouses by means of crane wagons and lifting winches.

The Institute organizes training and information programs aimed specifically at officers of the National Fire Corps, as well as seminars and conferences open to the public with the participation of national and international organizations in the field of security, rescue, against fires.



**Building F  
FLOOR 0**





### How to reach ISA

You can reach *ISA - Istituto Superiore Antincendi* using the subway (B-line, "Piramide" station), or public bus transportation (Bus No. 23 or No. 769). Also, *ISA* is only 400 meters far from "F.S. Ostiense" train station, that is connected with Rome Fiumicino Airport.

### From Fiumicino Airport to Termini Station

- **BY TRAIN** Go to the railway station located in the airport, near the Arrivals and Departures terminals, you can take: *Leonardo Express*, a non-stop service exclusively for airport passengers to/from Rome Termini railway station leaving every 15 minutes with a journey time of 32 minutes, or *Regional FL1 trains* to/from other stations in Rome, including Rome Tiburtina, with departures every 15 minutes on weekdays and every 30 minutes on weekends and holidays. Please refer to the [Fiumicino Airport Website](#) for the latest timetables.
- **BY BUS** Buses take about 45 minutes to get to Rome Termini station from Fiumicino airport in normal traffic conditions. Buses available include: [SIT BUS SHUTTLE](#), [T.A.M. Srl](#), [TERRAVISION](#).

### From Ciampino Airport to Termini Station

- **BY TRAIN** The nearest train station is in the town of Ciampino, connected to the airport by COTRAL/SCHIAFFINI buses every 30 minutes. The journey time is about 5 minutes.
- **BY BUS** Bus connections are provided by these companies: [ATRAL](#), [COTRAL](#), [SIT](#), [TERRAVISION](#), [SCHIAFFINI](#). OPTION 1: Bus to Termini Station. OPTION 2: Bus to Anagnina Metro station (A line). Then take the Metro A-Line to Termini Station.

### From Termini Station to the venue

- from Termini Station take the subway: Metro B line (color: blue) to "Piramide" station.
- from "Piramide" station you can reach the *Istituto Superiore Antincendi (ISA) - building H*, on foot (about 10 minutes) or you can take a taxi.

**By taxi (from Fiumicino Airport or Ciampino Airport directly to the venue)**

At all Terminals of Rome Fiumicino Airport, as well as at Ciampino Airport, taxi service for the city of Rome is available. You do not need to go to Termini Station but can directly go to the venue, that is 900 meters far from Ostiense Station. The fare from/to Fiumicino Airport - Ostiense Station is EUR 45, from/to Ciampino Airport – Ostiense Railway Station is EUR 30. Fares are fixed by the Municipality of Rome and are subject to change without notice. Please check the [Municipality website](#).

**Useful Links**

Rome [Metro lines map](#).

Rome [Metro, Trains, and Tram map](#).

## 13. CONFERENCE DINNER

Villa Parco della Vittoria

Address: Via della Camilluccia, 64, 00135 Rome

Website: <https://villaparcodellavittoria.it/en/>

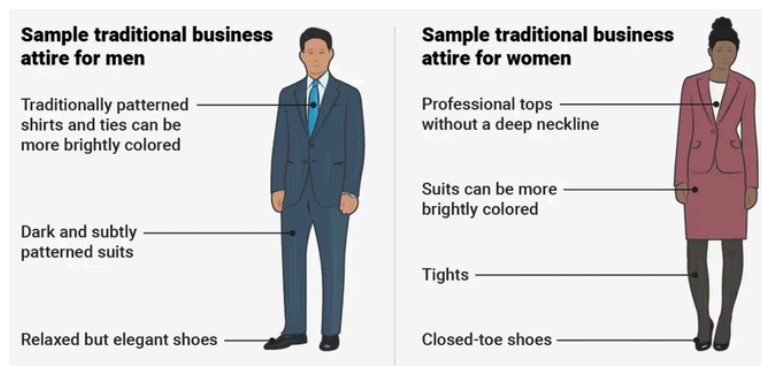
Date: 01 October 2026

Time: 07.00 p.m. - 11.00 p.m.



WELCOME TO VILLA PARCO DELLA VITTORIA, THE PERFECT VENUE TO HOST PRESTIGIOUS CONFERENCES LIKE SICC SERIES CBRNE CONFERENCE 2026

The dress code for the conference dinner is "**BUSINESS ATTIRE**" for all participants.



## 14. DRESS CODE

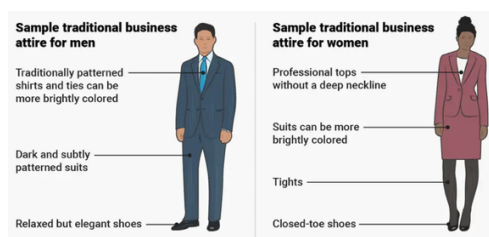


To ensure a consistent and professional standard throughout the **SICC Series CBRNe Conference 2026**, the following dress code will apply for the **entire duration of the conference**:

- **Civilian participants** (including Academies, Research Centres, Public Institutions, and Industry representatives) are kindly requested to follow a **Business Attire** dress code.
- **Participants from uniformed services**, including the Army, Navy, Air Force, Firefighters, Police forces, Civil Protection organizations, Red Cross societies, volunteer corps, and other professionals who routinely operate in uniform, are requested to wear their **Working Uniform Attire**.

We appreciate your cooperation in maintaining an appropriate and professional environment throughout the conference.

The dress code for the civilians (Academies, Research Centre, Public Institutions, Industries) is "**BUSINESS ATTIRE**".



The dress code for experts from uniformed services is "**WORKING UNIFORM ATTIRE**".





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ENJOY SICC SERIES CBRNe Conference 2026!

*Local Organizing Committee (L.O.C.)  
SICC Series – CBRNe Conference 2026*