



Bio-Safety & Bio-Security Centre

Established in October 2015, the Bio-Safety & Bio-Security Centre forms a unique platform for studies and research projects related to the preservation of human health and the environment. The centre's mission is to strengthen national security by reducing the risks posed by misuse of life sciences, epidemics, and other destabilising events, and to improve the nation's resilience in the face of such events through excellence in training, education and research of advanced biotechnology. We provide expertise in the fields of microbiology, virology, molecular biology, environmental health and safety and risk assessment and management. The centre offers specialised laboratory testing services for various types of specimens, and facilitates technology transfer, education, training and capacity building for local and regional institutions.

Our Services

- Routine analyses:
 - Molecular detection of pathogens (viruses, bacteria, fungi, etc.) in various types of samples: water, sludge, food, cosmetics, plants and clinical (human and animal) samples
 - Qualitative and quantitative approach for the detection of genetically modified organisms (GMOs) in food and feed samples. In addition to targeting selected authorised and unauthorised GM events in maize, soya and rice-containing products
 - Identification of food fraud using the polymerase chain reaction (PCR) technique, in addition to conducting halal tests to detect pork derivatives in food and cosmetics
 - Antiviral efficacy of disinfectants, disinfecting devices and technologies, in addition to natural extracts from plants and biofertilisers, using virus-culturing method
- Consultations and technical studies related to molecular biology and microbial assessment such as: enzyme activities, gene expression, sequencing, seroprevalence study, DNA fingerprinting for plants and seed and others
- Specialised research on zoonotic (infectious) diseases, technical studies and capacity building activities
- Technical and social research:
 - Plays an active role in policymaking and legislation development related to CBRN risk mitigation
 - Advocates a networked approach that fosters robust partnerships and collaborations in the face of the threats of a networked world
- Provides a space for sharing knowledge, ideas and expertise across borders and disciplines
- Capacity building and technical support:
 - Designs and delivers training programmes tailored to the needs and operational context of local beneficiaries
 - Training provider of internationally-accredited programmes across the CBRN field
 - Develops and adopts innovative approaches to training and engaging, gamified methods suitable for adult learning environments
- Professional development:
 - Fosters a mindset of security through the development of tailor-made long-term organisational, national and regional programmes
 - Indigenises security programmes to local and regional audiences to ensure proper execution, impact and sustainability
 - Utilises existing regional resources and expertise
 - Biological and chemical (Bio-Chem) risk assessment studies



Health & Molecular Sciences Division

The Health & Molecular Sciences Division conducts joint research that addresses human and environmental health and safety by providing quantitative and qualitative analyses to address health issues and studies that focus on the prevalence of antibiotic-resistant elements in various environmental samples. We assess the risks of exporting, importing and trading genetically modified food and feed in local markets, as well as the efficiency and effectiveness of vaccines included in the National Vaccination Programme of the Ministry of Health. The division now comprises three active laboratories: Molecular Biology Laboratory (BSL-2) equipped with PCR machines (conventional, real-time & digital PCR) in addition to serological techniques; Virology Laboratory (BSL-2+) with suitable design and environment to handle high-risk group pathogens, characterised by directional airflow with negative pressure, HEPA filters and glove box; and Food Security Laboratory (BSL-2) which provides molecular services to detect plant pathogens and conduct DNA fingerprinting to the plants using sequencing machine and other molecular tests.

Biological-Chemical Safety & Security Services Division

The Biological-Chemical Safety and Security Division hosts and manages the MENA Bio-Chem COMPASS online platform. This platform enables a collaborative community to share training materials and resources throughout the Middle East and North Africa (MENA) region, with a focus on safety and risk prevention for laboratory and research contexts. We focus on transferring technology, training and capacity building in local and regional institutions, combining theoretical and practical learning through on-site and distance training. We are thus engaged in developing and enhancing a bio/chem risk management system in national and regional laboratories of research, diagnostic and academic institutions.

Chemical, Biological, Radiological & Nuclear (CBRN) Office

The CBRN Office collaborates with academic institutions and research centres to participate in research and policy groups, and develop research studies and policy recommendations. The office hosts visiting scholars, researchers and interns for research purposes.

The main areas of research work include:

- CBRN security
- Arms control, non-proliferation and disarmament
- Science, technology and security
- Radiation detection and protection

Recognising that capacity building is a crucial driver of development, the CBRN Office offers training to a wide range of stakeholders from government and civil society, and works to link experts across the region and globally to exchange insights into best practices and discuss solutions to common challenges. The CBRN risk mitigation efforts usually require substantial investments in sophisticated equipment and systems. However, the human element remains a crucial determinant of performance. Additionally, with a wide network of technical subject matter experts and specialists, the CBRN Office is in a position to provide advisory services and technical support for relevant beneficiaries in the private, governmental and non-governmental sectors working within the CBRN field.

Key capabilities include:

- Network of regional and international experts
- Curriculum development
- Redevelopment of material into Arabic
- Training and workshop implementation
- Tabletop exercise development and delivery
- Access to training simulation sites and accredited labs
- Field exercise development and delivery
- Provide advisory services and technical support

Furthermore, building on previous experience in developing awareness programmes in the nuclear and biological sectors, the CBRN Office will continue to offer support for designing and implementing such programmes for national and regional stakeholders. This may include carrying out background research and developing awareness courses, signage campaigns and media content.