



The Secretary-General's Mechanism

Issue 2, July 2021

Newsletter for Nominated Experts and Analytical Laboratories for the Secretary-General's Mechanism for the Alleged Use of Chemical and Biological Weapons



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Upcoming activities

Dear Colleagues,

We are very pleased to share with you the second issue of our newsletter. The focus of this issue is on the external quality assessment exercises (EQAEs) that some of our partners offer for analytical (biological) laboratories on the UNSGM roster. In this issue, you will find general information on the mandate for such exercises and then overviews from the organizers of past, ongoing and upcoming EQAEs.

You will also find more information about recently completed activities, as well as planned upcoming activities. Although the pandemic continues to impact in-person meetings, UNODA has organized and supported several virtual events in the meantime and remains optimistic that we will have in-person meetings, training events and workshops to report in future editions.

We are also pleased to share that we have updated the [UNSGM page](#) on the UNODA website. On the updated website page, you'll find relevant information such as key documents for the UNSGM, details on training activities and partners, past editions of this newsletter and further information. We hope you find this a valuable resource on the UNSGM going forward.

Please enjoy this newsletter and let us know if you have any feedback.

Your UNODA team in support of the UNSGM

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UNODA activities: Call-Out Exercise and Onboarding Sessions

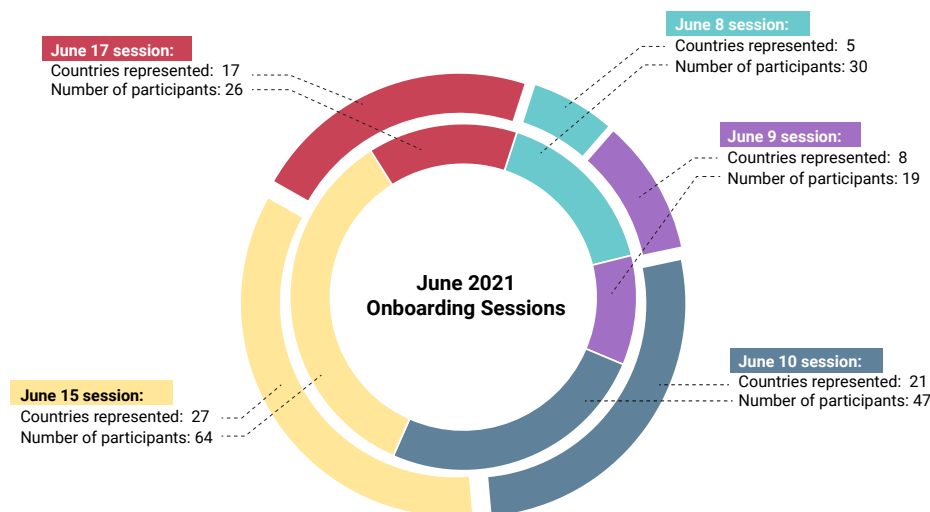
In April 2021, UNODA conducted the annual **Call-Out Exercise** for experts and points of contact on the UNSGM roster. The purpose of this unannounced exercise is to routinely check the response time, which is expected to be 48 hours or less. We also use this opportunity to check the continued availability and to keep the roster up to date. For the first time, points of contact for nominated laboratories were included in the Call-Out Exercise. Based on the results of the exercise, UNODA will continue efforts to follow up with Member States on updated contact information for nominated experts and laboratories, as well as continued availability of previously nominated experts who did not respond.

From 8–17 June 2021, UNODA hosted five virtual **Onboarding Sessions** for qualified experts, expert consultants, and points of contact for analytical laboratories who have been nominated by their Governments to the UNSGM roster. Over 180 participants from 40 countries joined the sessions across many time zones. The participants learned about the background and mandate of the UNSGM, the different roles and expectations of the respective

roster categories, the training programme for nominated experts, the external quality assessment exercises for nominated laboratories and past investigations conducted by the UNSGM. Participants were also given an overview of the UNSGM Guidelines and Procedures, which were endorsed by the General Assembly and set out how a UNSGM investigation should be conducted. As this was the first time UNODA conducted these onboarding sessions, all persons currently nominated to the UNSGM roster were

invited to participate. Going forward, the sessions are to be held annually for newly nominated experts and laboratories.

The COVID-19 pandemic continues to have a significant impact on planned activities. Meetings and specialized skill training courses that require in-person presence remain postponed until such activities can be conducted safely again. However, in the meantime, UNODA continues to organize and support events that can be held virtually.



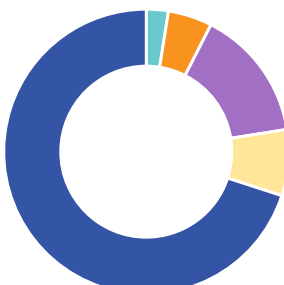
Nominations of qualified experts, expert consultants and analytical laboratories to the UNSGM roster (as of 10 June 2021)

495 QUALIFIED EXPERTS



- Africa (63 from 7 Member States)
- Asia and the Pacific (109 from 13 Member States)
- Eastern Europe (91 from 14 Member States)
- GRULAC (36 from 5 Member States)
- WEOG (196 from 18 Member States)

40 EXPERT CONSULTANTS



- Africa (1 from 1 Member State)
- Asia and the Pacific (2 from 2 Member States)
- Eastern Europe (6 from 1 Member State)
- GRULAC (3 from 1 Member State)
- WEOG (28 from 8 Member States)

83 ANALYTICAL LABORATORIES



- Africa (7 from 3 Member States)
- Asia and the Pacific (18 from 4 Member States)
- Eastern Europe (13 from 7 Member States)
- GRULAC (1 from 1 Member State)
- WEOG (44 from 13 Member States)

Laboratory exercises: Background and mandate

Analytical laboratories that are nominated by their Governments to the UNSGM roster may be invited to participate in inter-laboratory calibration studies or external quality assessment exercises (EQAEs) as outlined in the Guidelines and Procedures for UNSGM investigations, which were developed by a group of experts appointed by the Secretary-General and endorsed by the General Assembly (General Assembly Document [A/44/561](#)).

According to the Guidelines and Procedures (paragraph 86), the aim of the interlaboratory calibration studies should be: for the nominated laboratories to demonstrate competence in the detection and identification of known chemical, biological and toxin (CBT) agents; to evaluate the capabilities of nominated laboratories to detect the presence of other toxic substances unknown to the laboratory in biomedical and environmental

samples; and to demonstrate the level of competence represented by the nominated laboratories collectively.

All EQAEs offered are related to biological agents, bacteria, viruses and biological toxins – they are either wet lab or dry lab exercises. Wet lab refers to handling samples, liquids and performing test, e.g., PCR or cultivating cell lines. Dry lab, in our context, refers to data analysis, mostly sequence data.

EQAEs are offered, funded and implemented by Member States and coordinated with UNODA. Once completed, the results of the EQAEs must be shared with UNODA in order to facilitate the assessment of the level of competence represented by the nominated laboratories collectively, as recommended in the Guidelines and Procedures. The EQAE results will not be shared with third parties or Member States.

Ongoing and upcoming external quality assessment exercises for laboratories nominated to the UNSGM roster

Currently, there is one ongoing EQAE programme for laboratories nominated to the UNSGM roster – RefBio, which is organized by the Robert Koch Institute (RKI) in Germany. There are also two upcoming EQAEs in 2021 and 2022 – one hosted by State Key Laboratory of Infectious Diseases Prevention and Control (SKLID) in China and another jointly hosted by RKI, the Technical University of Denmark, National Food Institute (DTU Food), and the Swedish Defence Research Agency (FOI). UNODA would like to thank our partners for their strong support of the UNSGM, especially for conducting the EQAEs and for the guest contributions in this issue. The following contributions were written by our partners and represents their views.

RefBio: Germany's contribution to strengthen the bio-analytical reference laboratories in the UNSGM



Germany's Contribution to Strengthen the Reference Laboratories 'Bio' in the UNSGM

UN Member States have nominated analytical laboratories to serve the UNSGM in case of an alleged use of bioweapons by identifying and characterizing biological agents. In order to ensure best practices and quality assurance of nominated laboratories in this specific field, in 2017, the Robert Koch Institute (RKI) in Germany has initiated the project RefBio. In addition to providing the individual diagnostic laboratories with the opportunity to test their performance, the RefBio project aims to continuously improve the laboratories' diagnostic capabilities to detect high consequence bacterial and viral pathogens as well as biological toxins. To achieve

this goal analytical laboratories are given the unique opportunity to regularly practice the characterization of biological agents and their molecular fingerprints during annually performed experimental exercises.

For the realistic quality-assured exercises, a range of artificially produced clinical, environmental and food samples are spiked with inactivated highly pathogenic bacteria, viruses or biological toxins. The participating laboratories are given a defined time frame to perform laboratory and computational analyses. Between 2017 and 2020, the agents in focus

comprised different pathogens such as Orthopoxviruses, Coronaviruses, *Francisella tularensis*, *Yersinia pestis*, *Bacillus anthracis* and the plant toxin ricin. In the course of the years, the submitted results showed the technical progress and diagnostic improvement, such as the development of new analytical and computational pipelines, e.g., high throughput technologies. To enable the participants to adhere to the formal and legal requirements for an investigation the participating laboratories are encouraged to document their chain-of-custody from the moment when the samples are received until the results are provided.

Far from being a solo effort, RefBio is strongly embedded in multilateral activities to strengthen the UNSGM's operational capabilities that have been successfully pursued by UNODA and UN Member States, including Australia, Denmark, France, Germany, Sweden, Switzerland, the United Kingdom, and the United States of America.

For the future, RefBio aims to extend the network's effectiveness, both at operational and geographical level. This implies comprehensive efforts to attract additional laboratories for UNSGM operations in parts of the world that are underrepresented in order to raise and harmonize global quality standards in diagnostics as a long-term objective. The laboratories' high level of competence and preparedness must be maintained. In this regard, RefBio is prepared to offer tailored training activities and to provide qualified long-term support. The involved labs are provided with qualified long-term assistance enabling the implementation, maintenance and improvement of essential laboratory elements and/or operations for the benefit of the Secretary-General's Mechanism. Finally, trust among network partners is a fundamental

prerequisite to closely and openly collaborate in such a sensitive area.

RefBio is funded by the German Federal Foreign Office and implemented by the Robert Koch Institute (RKI), the main federal public health institute in Germany that operates within the portfolio of the Federal Ministry of Health. From the RKI department ZBS - Centre for Biological Threats and Special Pathogens, three units are involved: ZBS1 - Highly Pathogenic Viruses, ZBS2 - Highly Pathogenic Microorganisms, and ZBS3 - Biological Toxins. All three units are highly experienced in conducting EQAEs in compliance with the internationally acknowledged DIN EN ISO/IEC 17043 for many years. As the exercises have become a well-established and accepted approach, the involved laboratories are familiar with the procedures and trust the provider.



© RKI

Further information is available by contacting the project coordination team: refbio-coordination@rki.de.

A UNSGM laboratory exercise led by China

China's State Key Laboratory of Infectious Diseases Prevention and Control (SKLID) will lead one UNSGM designated laboratory exercise project in 2022, where all rostered laboratories will be invited to participate. The project, "Disease X Testing", is tentatively scheduled in May 2022 and will last for about one month. A seminar will be held after the project to enable all participants to share experiences so as to lend support to the UNSGM.

The term "Disease X" refers to a potential international epidemic caused by an unknown pathogen, which is highly

suspected to be a potential new respiratory virus or meningitis virus of animal-origin. SKLID will provide "clinical samples" from suspected patients and healthy persons, as well as "animal samples" from wild animals. Participants may choose analytical methods for sample analysis freely, according to the capacities of their lab, to identify or to rule out the new virus and its animal source.

SKLID, established in March 2005, focuses its work on the prevention and control of infectious diseases. Using advanced technologies such as genomics,

proteomics and bioinformatics, it has tackled a host of scientific and technical issues in infectious diseases prevention and control. It is also responsible for research on the evolution and variation of pathogens, technologies and strategies on infectious diseases response, epidemic trends and their predictions and occurrence mechanisms of emerging infectious diseases.

For more information about this exercise, please email UNSGM@un.org and UNODA will connect you with the organizer.

Dry-lab external quality assurance exercises: Joint projects led by the Robert Koch Institute in Germany, the Technical University of Denmark's National Food Institute and the Swedish Defence Research Agency

Since a State may request the UN Secretary-General to launch an investigation of a suspected use of a biological agent as a weapon, the UN needs to have available the technical capabilities that will enable it to carry out this responsibility. An investigating team will need to determine, for example, whether an outbreak resulted from natural sources or was caused deliberately. This will require a detailed characterization of the agent involved to help determine whether it is a naturally-occurring strain

or whether it has been intentionally modified.

Researchers from the Technical University of Denmark, National Food Institute (DTU Food), working with the Swedish Defence Research Agency (FOI), have executed a series of dry-lab exercises on genomic identification and characterization of bacteria. The aim was to evaluate the existing capacity as well as to build capacity and raise awareness and interest of suitable laboratories to assist the UN in tracing the cause of a potential

bioterrorism attack by using real-time whole genome sequencing analysis.

In 2018, a proficiency test on characterization of single genomes and a metagenomics-based proficiency test were both launched with the participation of 60 and 47 laboratories from 33 and 26 countries, respectively. A simulated exercise including 260 genomes and 14 metagenome datasets was executed in 2019 with the participation of 37 laboratories from 25 countries (see map). An improved global network of laboratories

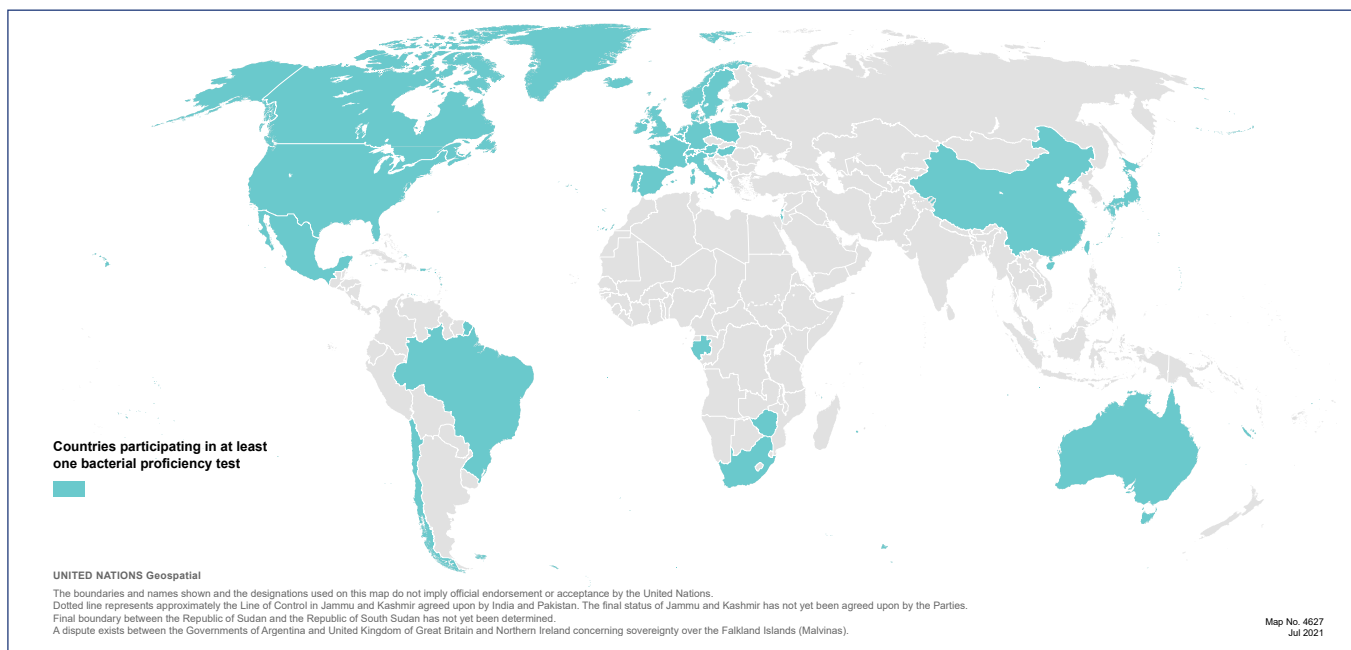
Although the described dry-lab activities mainly focused on bacteria, highly pathogenic viruses also have the potential to be used as biological weapons. For this reason, the UNSGM also needs the capability to do detailed characterization of viral agents.

www.surveymonkey.com/r/ViralEQAE_signup

For more information on the sign-up process, please contact jetk@food.dtu.dk. For general questions regarding the EQAE, please contact Brinkmanna@rki.de.

high-risk and genetically modified viruses which could be used as biological weapons. Additionally, strategies for the combat and prevention of infections with highly pathogenic viruses as well as research on therapy, prophylaxis and pathogenesis are performed.

The National Food Institute (DTU Food) researches and communicates sustainable and value-adding solutions in the areas of food and health for the benefit of society. The institute's tasks are carried out in



- Which relevant bio-threat virus(es) can be found in the dataset?
- Is the virus potentially genetically engineered?
- Can any peculiarities in the dataset/genome be identified?

The bacterial and viral dry lab genome sequencing exercises are funded by the U.S. Department of State as part of its program to further strengthen the capabilities of the UNSGM.

The Robert Koch Institute (RKI) is the main federal public health institute in Germany, subordinate to the Federal Ministry of Health and government's central scientific institution in the field of biomedicine. It is one of the most important bodies for the safeguarding of public health in Germany.

The Centre for Biological Threats and Special Pathogens (ZBS) has the mission to identify unusual biological events with highly pathogenic agents that might be used with bioterrorist intent. In addition, ZBS assesses the health implications for the general public and works on preparedness and response to such incidents. The subunit ZBS 1, Highly Pathogenic Viruses, has the mission to establish diagnostic methods to detect

a unique interdisciplinary cooperation between the disciplines of nutrition, chemistry, toxicology, microbiology, epidemiology and technology. The Research Group for Global Capacity Building works to strengthen the ability and increase the quality of the global monitoring of antimicrobial resistance and to develop and implement methods and guidelines that can support efforts to build the capacity of the global monitoring of antimicrobial resistance and whole genome sequencing as well as increase the quality of monitoring data. This is done in collaboration with the EU, WHO and FAO, for whom the National Food Institute is the reference laboratory in the field of antimicrobial resistance. The research group has a special focus on developing and implementing ring tests to validate pheno- and genotypic antimicrobial resistance data.

The Swedish Defence Research Agency (FOI) is an assignment-based authority under the Swedish Ministry of Defence. The core activities are research, methods and technology development, as well as studies for the use of defence, security and safety. FOI proposes problem solving based on new knowledge and new technology and provides leading expertise in a wide range of fields of application

through in-house competence and extensive networks. The Division of CBRN Defence and Security has a long and broad experience in research and development in the areas of analyses of samples of suspicious and dangerous CBRNE agents. The Department for Biological Agents focuses on analysis of samples where the biological agent resides in a complex background of other biological agents

and abiotic matrices that influences analytical capability. One research focus is to differentiate between intentional and natural spread of biological agents to support investigations of alleged prohibited use of biological agents. FOI has repeatedly supported UNODA and UNSGM by contributing to field and laboratory exercises, courses and workshops aimed at strengthening the mechanism.

Upcoming activities

2021:

- August 2021: The Robert Koch Institute (Germany) will host a series of virtual table-top exercises for qualified experts
- 15-17 September 2021: Spiez Laboratory (Switzerland) will host the sixth annual UNSGM Designated Laboratories Workshop (virtually)
- September 2021: Dry-Lab External Quality Assurance Exercise (EQAE) led by Robert Koch Institute (Germany), the Technical University of Denmark (DTU Food) and the Swedish Defence Research Agency will begin
- October 2021: RefBio EQAEs will begin
- Late 2021 (date TBC): UNODA will host a virtual workshop for nominated expert consultants
- Late 2021 (date TBC): UNODA will host a virtual roundtable discussion for nominated qualified experts
- Late 2021 (date TBC): UNODA will host a virtual UN Internal Task Force (ITF) Coordination Meeting
- Late 2021 (date TBC): UNODA will host a virtual outreach workshop for Southeast Asia, with a follow-up in-person workshop when the travel situation allows
- Late 2021 (date TBC): The U.S. Department of State will host a virtual table top exercise on bio sample transfer

2022 (all dates TBC):

- The capstone exercise organized by Germany is now rescheduled for early 2022. The focus of this exercise is an on-site investigation of the alleged use of a biological weapon in a (fictitious) country. Theoretical considerations regarding the mission-planning as well as organizing supplies and equipment already took place during a tabletop exercise in 2020. The full-scale exercise in 2022 will cover several of the other main aspects of a UNSGM investigation, including border crossing and negotiation with the host country, interviewing, sampling, decontamination, chain of custody and sample transport.
- May 2022: "Disease X Testing" EQAE will be led by China's State Key Laboratory of Infectious Diseases Prevention and Control (SKLID)
- May 2022: Dry-Lab External Quality Assurance Exercise (EQAE) will be hosted by Robert Koch Institute (Germany), the Technical University of Denmark (DTU Food) and the Swedish Defence Research Agency
- Skills training workshops that must be held as in-person events will be rescheduled as soon as it is safe to do so.
- UNODA will host virtual outreach workshops and follow-up in-person workshops when the travel situation allows in Africa, Latin America and the Caribbean.

Supporting the UNSGM

UNODA's work to ensure the readiness of the UNSGM is made possible by generous financial support and in-kind contributions, such as the provision of training material and hosting events, from Member States. We are especially grateful for the support from Canada, Germany, Japan, Spain, Sweden, Switzerland, the United States, the United Kingdom, and the European Union. We also appreciate the support from our international partner organizations, including the WHO, INTERPOL, OPCW, and the World Organisation for Animal Health (OIE). This voluntary support from Member States and organizations is a cornerstone for ensuring and improving operational readiness of the UNSGM.

Thank you for your interest in our newsletter. We plan to send this newsletter twice a year and we would welcome your contributions to future editions.

Contact us

Questions, concerns, suggestions? Please do not hesitate to contact us if you have any questions regarding supporting the UNSGM or if you are interested in participating in activities.

We would love to hear from you! Please contact us here:



UNSGM@un.org