Dual use life science research (DUR/C): dialogue with academies and councils

MEETING REPORT

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1. Background

Advances in science and technology hold great promise and hope for new and improved ways to address global health and support healthier populations worldwide. Science and technology have an undisputed role in working towards the Thirteenth General Programme of Work 2019-2023 (GPW 13) of the World Health Organization (WHO) to achieve the triple billion targets. Yet progress in life sciences and the advent of new and emerging technologies are not without risk; indeed, research in the broad area of life sciences inherently holds the risk of being misapplied either inadvertently or intentionally to cause harm and should as such be considered "dual use research" (DUR) and "dual use research of concern" (DUR/C).

Regular reviews are required to adequately assess the implications of science and technology advances. Over the last years many new developments have occurred, including the emergence of novel technologies and the presence of new actors and stakeholders. In view of this, the recently created Science Division in WHO is organizing an iterative consultative process to explore the current DUR/C landscape in order to establish baseline knowledge and a common point of understanding on the issues and concerns related to DUR/C within the global context.

A series of DUR/C Dialogues will be organized in the coming months with the following objectives: to present WHO Health Foresight function and DUR/C activities; to gather and exchange different stakeholder perspectives on approaches to DUR/C and to raise awareness on DUR/C issues among different stakeholder groups; to identify critical issues in DUR/C from the perspective of different stakeholder groups; to highlight lessons learned from past experiences on addressing issues and concerns in DUR/C; and to identify key priority areas for action and appropriate areas for collaboration with different stakeholder groups.

The expected outcomes of these dialogues are to get an understanding of DUR/C from the perspectives of different stakehodlers; to translate knowledge and expertise into concrete tools, resources and frameworks to support stakeholders and WHO Member States to adopt changes in practices; and to increase collaboration and engagement with stakeholders on DUR/C.

2. Meeting key points

On 6 July 2020, fourteen academies and councils virtually attended the first DUR/C Dialogue (Annex). The meeting was opened by Professor John Reeder, Director of Research for Health Department, WHO Science Division. Professor Reeder underlined that while science is contributing to society and aims at improving health, there is also a need to think responsibly about potential harms and to take responsible action together to address DUR/C issues. Dr Anna Laura Ross, Unit Head of the Emerging Technologies, Research Prioritisation and Support of the Research for Health Department, briefed the meeting on the WHO Foresight function and its links to DUR/C activities.

In its first session, the participants were presented with the key activities undertaken by a number of academies and councils and the key challenges they faced. The session was organized around

several key questions informing the meeting objectives and all participants were encouraged to provide their inputs. The meeting was briefed on existing initiatives and lessons learned to date by:

- Dr Katherine Bowman, from the US National Academies of Science, Engineering and Medicine (US NASEM);
- Dr Flavia Schlegel, from the International Science Council (ISC);
- Dr Peter McGrath, from the InterAcademy Partnership (IAP);
- Professor Quarraisha Abdool Karim, from the World Academy of Sciences (TWAS); and
- Professor Stephan Becker, from the German National Academy of Sciences Leopoldina.

In addition to relevant activities undertaken by their respective institutions, panelists raised a number of points including that academies have the advantage of having access to national experts and their knowledge; that academies convene experts groups to identify and assess science and technology (S&T) developments and contribute to the understanding of S&T and their implications for DUR/C; and that they address issues around the management and the conduct of science, synthetize information and provide policy advices. For instance, IAP and US NASEM have recently developed qualitative frameworks and decision trees which can identify risks and benefits. Participants heard about the importance of looking at DUR/C and its potential risks from an ecosystem perspective and the importance of looking at science as a global public good. The importance of open and responsible science was also underlined along with the economic and political pressure, the business culture and the competition in science that may have a negative influence on science safeguards.

The briefings were followed by a general discussion. Several points were highlighted including the work undertaken done by US NASEM and IAP over the past two decades and the importance of addressing DUR/C issues with academies from around the world in order to have a broad perspective on this topic. Notwithstanding, in many countries, students, scientists and policy makers are not aware of DUR/C. Participants commented about the need for shared responsibilities between different actors and the need to increase awareness, accountability and transparency between and within countries. Participants also noted that DUR/C is not perceived as a priority at the global level.

In its second session, participants identified several priority actions and actors. This session was similarly organized around a set of key questions informing the meeting objectives. Participants were briefed by:

- Dr Ursula Jenal, from the Swiss Academy of Sciences (SCNAT);
- Professor Zabta Khan Shinwari, from the Association of Academies and Societies of Sciences in Asia (AASSA);
- Dr Robin Fears, from the European Academies' Science Advisory Council (EASAC);
- Professor Herawati Sudoyo, from the Indonesian Academy of Sciences (AIPI); and
- Professor Mu-ming Poo, from the Chinese Academy of Science.

In addition to briefing participants about the relevant activities undertaken by their respective institutions, the panelists highlighted the role of code of conduct on DUR/C; the need to continue to support raising awareness activities; the importance of responsible conduct of science for scientists in universities; to support capacity building for academies with less resources; to work across disciplines and sectors and to develop cross-cutting dialogues on DUR/C; to encourage shared responsibilities among scientists and other stakeholders (e.g. governments' ministries, private sector and other relevant actors) and the need to include biosafety and biosafety advisers in DUR/C discussions along with training and resources. Participants also heard that addressing DUR/C is a continuous effort that will require a broad involvement that goes beyond life science researchers. Further key points included the importance of continuing horizon scanning in the biosciences; the role of scientific communities in identifying new S&T and their implications for DUR/C (e.g. genome editing, gene drives, gain of function research) as well as their roles in advising policy makers and other stakeholders on emerging technologies, in assessing their potential benefits and risks and in identifying risk mitigation strategies, including the need for global guidelines on DUR/C. Finally, terminology issues around DUR/C were underscored (e.g. biosecurity can have different meanings in different languages).

The briefings were followed by a short general discussion. In addition to sharing related activities in their respective countries, the importance of addressing DUR/C within the concept of open science and the need for global consensus and ethical principles on DUR/C was emphasized.

3. Key takeaways

A number of recurrent themes and concepts emerged during this first DUR/C Dialogue with academies and councils. The meeting participants noted that addressing DUR/C issues require joint efforts from multiple stakeholders. These include, for instance, scientists, publishers and the media, funding agencies, biosafety and biosecurity advisers, policy makers of different governmental departments, the industry and DIY bio community labs. Participants further underlined that addressing DUR/C issues requires a multidisciplinary approach and global consensus.

The meeting highlighted the need for shared responsibilities between the different stakeholders and stressed the importance of transparency, of responsible conduct of science and the need to