

SUBMISSION TO THE SPECIAL RAPPORTEUR ON TOXICS AND
HUMAN RIGHTS ON THE UPCOMING THEMATIC REPORT ON THE
RIGHT TO BENEFIT FROM SCIENTIFIC PROGRESS AND ITS
APPLICATIONS

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Table of Contents

Part 1. The Right to Science: normative content and entitlements.	1
Part 2. Applying the right to science framework to toxics.....	2
Part 3. Answering selected questions from the <i>Request for Inputs</i>	3
Author's background	4

1. This Submission is divided into three sections. The first section presents a general conceptual framework to construe the normative content of the right to benefit from scientific progress and its applications (further referred to as "right to science" for the purposes of this Submission). The second section discusses how the entitlements fleshed out in the first section apply to the context of toxic hazards and risks. The third part addresses selected questions listed by the Special Rapporteur in his *Request for Inputs*.

Part 1. The Right to Science: normative content and entitlements.

2. The right to scientific progress is enshrined as a human right in Article 15 of the International Covenant on Economic, Social and Cultural Rights (ICESCR). In 2020, the Committee on Economic, Social and Cultural Rights (CESCR) published General Comment No. 25 (General Comment No. 25), which provides the Committee's interpretation and guidance on the relationship between science and the enjoyment of economic, social, and cultural rights.¹

3. This Submission is based on these two sources, which provide the foundations for understanding the normative content of the right to science, as integrated by two additional authoritative legal sources. The first source is the 2012 report submitted by Farida Shaheed, the then-UN Special Rapporteur in the field of cultural rights.² The second source is the Recommendation on Science and Scientific Researchers, an instrument adopted by UNESCO in 2017 that updates and renames the 1974 Recommendation on the Status of Scientific Researchers.³

4. Based on an analytical reading of these sources, I construct the entitlements secured in Article 15 ICESCR as a cluster of rights organized in three first-level rights, each comprised of various second-level rights. The resulting cluster of rights to science is the following:⁴

- 1) The right to scientific progress
 - a. Right to scientific activities
 - b. Right to responsible scientific progress
- 2) The right to benefit from scientific progress
 - a. Right to scientific literacy
 - b. Right to access scientific knowledge and outputs
 - c. Right to existing and future applications of scientific progress
 - d. Right to policies based on scientific evidence
- 3) The right to participate in scientific progress
 - a. Right to access the scientific profession
 - b. Right to contribute to scientific progress
 - c. Right to participate in policy decisions relating to science

¹ CESCR, General comment No. 25 (2020) on science and economic, social and cultural rights (article 15 (1) (b), (2), (3) and (4) of the International Covenant on Economic, Social and Cultural Rights), E/C.12/GC/25, 30 April 2020 (General Comment No. 25).

² Human Rights Council, Report of the Special Rapporteur in the field of cultural rights, Farida Shaheed The right to enjoy the benefits of scientific progress and its applications, May 14, 2012, A/HRC/20/26.

³ UNESCO, Recommendation on Science and Scientific Researchers, Records of the General Conference, 39th session, Paris, 30 October-14 November 2017, v. 1: Resolutions, <https://unesdoc.unesco.org/ark:/48223/pf0000260889#page=116>

⁴ First-level rights are listed as numbers; second-level rights are listed as letters.

Part 2. Applying the right to science framework to toxics.

5. This section discusses how selected entitlements fleshed out in the first section apply to the context of toxic hazards and risks. Because of the word limit on Submission, I cannot discuss the cluster of rights' contents in detail (A detailed account appears in a draft paper that I will be happy to share should the Special Rapporteur wish to read it.) My Submission is thus limited to pointing how some entitlements apply to toxics.

6. The right to scientific progress is succinctly and brilliantly summarized by the CESCR in General Comment No. 25 as the duty of States to ensure that "scientific progress happens."⁵ At a basic level, scientific progress happens when scientists can "do science," that is, to carry out scientific activities and communicate the results of their research efforts within the scientific community and the public. In the context of toxics, this means that the public has a right to scientific activities to understand better which substances are hazardous, manage them, and dispose of them. This right is respected if scientists are guaranteed freedom of research and protected from external threats such as pseudoscience, science denial and other anti-science perspectives⁶, and undue influence of corporate or political interests. The scientific community must, in turn, act responsibly (with integrity and respect of human rights) and pay particular attention to producing scientific knowledge on whether toxics disproportionately affect persons and groups in vulnerable situations, including indigenous peoples.

7. The right to benefit from scientific progress entitles the public to access the scientific knowledge and outputs on toxics produced by scientists. Access includes scientific knowledge appearing in peer-reviewed publications and scientific outputs, which UNESCO defines as "original scientific research results, raw data and metadata, software, including source code, source materials, digital representations of pictorial and graphical materials and scholarly multimedia material."⁷ Further, the public is entitled to a sufficient literacy level to understand such information, scientific knowledge and outputs and identify anti-science perspectives and other misleading knowledge that may interfere with their right to enjoy scientific progress.

8. Further, this right entitles the public to have access to the *existing technologies* ("applications of scientific progress") that minimize the risks and impacts of hazardous substances and requires governments to take a proactive role in the *development of new technologies* that, based on existing science, can minimize the impacts of hazardous substances. Finally, the right to benefit from scientific progress entitles the public to policies that are aligned with the "best available, generally accepted scientific evidence."⁸ this scientific evidence consists of reproducible data and analyses, ordinarily published after peer-review and considered to be accepted by scientific consensus or at a minimum subject to minimal epistemic contestation. This latter requirement means that the scientific community does not disagree on core issues concerning a particular study or specific scientific evidence, even when scientific consensus has yet to be reached. According to the CESCR, policies must align with such

⁵ General Comment No. 25, *supra* note 1, para. 16.

⁶ Distinguishing between science and pseudoscience is the subject of a vast literature in the philosophy of science that goes under the name of "demarcation problem." See, Sven Ove Hansson, "Defining Pseudoscience and Science," *Philosophy of Pseudoscience: Reconsidering the Demarcation Problem*, 2013, 61–77; Martin Mahner, "Demarcating Science from Non-Science," in *General Philosophy of Science* (Elsevier, 2007), 515–75.

⁷ UNESCO, First draft of the UNESCO Recommendation on Open Science, Paris: UNESCO, SC-PCB-SPP/2020/OS/R1, para 9 (i).

⁸ General Comment No. 25 mentions this requirement in several paragraphs, including paras 52, 54, and 82.

evidence. The general dictionary definition of alignment is for two or more things to be positioned in a straight line or parallel. Not crossing each other, not perpendicular, not pointing to opposite directions. As a result, a policy is aligned with science when two requirements are met: first, the policy and scientific evidence are in a relationship; second, the relationship is where policy and science converge on the same trajectory or parallel trajectories. To meet these requirements, policymakers must set up a mechanism to incorporate scientific evidence in decision-making about hazardous substances and ensure the resulting policies and programs do not diverge, that is, contradict or ignore that scientific evidence.

9. The right to participate in scientific progress entitles the public to contribute to producing science on hazardous substances. This ability goes under the name of "citizen science," which entitles citizens to be involved as contributors (by collecting data), as collaborators (by contributing to data analysis, interpretation, or dissemination), and as co-creators (when they are involved in all stages of research, including research design) of science.⁹ Finally, the right to participate in scientific progress entitles citizens to participate in policy decisions relating to science. The General Comment present this entitlement as follows:

... some decisions concerning the orientation of scientific research or the adoption of certain technical advancements, should be subjected to public scrutiny and citizen participation. As far as possible, scientific or technological policies should be established through participatory and transparent processes and should be implemented with accompanying transparency and accountability mechanisms.¹⁰

Thus, governments should set up participatory mechanisms that enable the public to contribute to hazardous substances policies and programs. As General Comment No. 25 points out, this entitlement is particularly relevant to people with disabilities and indigenous peoples, vulnerable groups disproportionately impacted by hazardous substances.

Part 3. Answering selected questions from the *Request for Inputs*.

10. This third part addresses selected questions listed by the Special Rapporteur in his *Request for Inputs*.

"Enabling the access to the right to information and scientific evidence, and environmental and human rights assessment as preconditions for the full enjoyment of the right to science": Access to scientific evidence is a core entitlement of the right to *benefit from* scientific progress (supra, para. 7).

"Tackling misinformation and disinformation campaigns and documenting attempts to manipulate or distort science in regulatory processes": The threats of pseudoscience are discussed above concerning the duty to ensure scientific progress (supra, para. 6) and provide the public with a sufficient degree of scientific literacy (supra, para. 7).

"Documenting attacks, threats, intimidation or harassment against scientists": this duty relates to the respect of scientific freedom and the duty to protect scientists (supra, para. 6).

"Giving effect to the precautionary principle regarding risks of the scientific process": the precautionary, the CESCR notes, "should not hinder and prevent scientific progress, which is

⁹ Rick Bonney et al., "Citizen Science: A Developing Tool for Expanding Science Knowledge and Scientific Literacy," *BioScience* 59, no. 11 (2009): 977–84.

¹⁰ General Comment n. 25, *supra* note 1, para. 55.

beneficial for humanity."¹¹ It is important to note that misuse of the precautionary principle is more problematic when it comes to translating science into applications. When misused, technologies may not be brought to the market, thus causing a loss of enjoyment of the benefits of scientific progress for the public.

"Promoting transparency, accessibility, diffusion of science and scientific evidence, innovations, and scientific education": The various entitlements strongly support all these goals in the cluster of the right to science. Scientists and the public have a right to access scientific knowledge and outputs. Transparency is essential to the progress of science and policymaking that is aligned with science and the public's participation in decision-making. Innovation is the essence of the right to *benefit from* scientific progress (supra, para. 8), and scientific education is the foundation of entitlement to scientific literacy (supra, para. 7).

"Promoting opportunities for citizens to contribute to scientific research": Opportunities to contribute to research and citizen science are at the core of the right to *take part in* scientific progress (supra, para. 9).

"Modalities for access to information on scientific findings": modalities must include direct access to scientific knowledge and outputs through the internet, libraries, and other infrastructure. Educational materials must also report scientific findings. Also, it is a right to access governmental records whenever decisions were taken or were supposed to be taken, in alignment with scientific evidence (supra, para. 8).

Author's background

11. Andrea Boggio, JSD, is a Professor of Legal Studies at Bryant University. He has published *Human Germline Genome Modification and the Right to Science. A Comparative Study of National Laws and Policies* (Cambridge University Press, 2020), *Compensating Asbestos Victims. Law and the Dark Side of Industrialization* (Routledge, 2016) and *Health and Development: Toward a Matrix Approach* (Palgrave-MacMillan, 2009). He has advised international bodies (UN Committee on Economic, Social and Cultural Rights, WHO, UNDP, and OECD) and national governments (Canada and Italy). He is a graduate of Stanford Law School.

¹¹ General Comment n. 25, *supra* note 1, para. 57.