# Scientific Advisory Board

## Keeping pace with scientific and technological change

The Scientific Advisory Board (SAB) comprises 25 independent experts from all geopolitical regional groups. It provides specialised advice to the Director-General, and by extension to States Parties, on developments in science and technology of relevance to the OPCW and the Convention.Every five years, the SAB submits an in-depth report to Review Conferences, highlighting both the risks these developments may pose, and the opportunities they may present, to implementation of the Convention and the work of the OPCW.

The SAB can also establish and coordinate temporary working groups to draw upon extended expertise for assessment and reporting on specific issues of relevance to the Convention.

SAB report

DG response

# Learn more

## Resources

**OPCW Science and Technology**
opcw.org/scitech

**IUPAC Top 10 Emerging Technologies**
iupac.org/iupac-2022-top-ten

## For more information, contact the Office of Strategy and Policy

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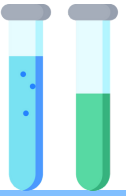
Collect your key chain now before they *argon*!

# Science for Diplomats



## Advances in science and technology: a tech-tacular guide

16 May 2023
World Forum

# Artificial Intelligence

Artificial intelligence (AI) is the ability of a computer or machine to think, learn, solve problems, and make decisions- tasks that typically require human intelligence. AI is not just robots and driverless cars, it touches many aspects of our everyday life, from smart homes to personalised shopping recommendations.

AI could be used to strengthen the verification regime, increase operator safety in conjunction with robotics technologies, provide critical data to fill information gaps, and assist in the rapid design and discovery of medical countermeasures for exposure to chemical warfare agents.

AI could be used to increase the ease and speed with which new toxic compounds may be discovered and novel synthetic routes to toxic compounds can be identified. The potential misuse of AI-based robotic platforms for the design and production aspects of chemical synthesis also poses a risk to the Convention.

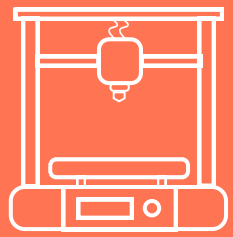
# Drones

A drone, or unmanned aerial vehicle (UAV), refers to any unpiloted aircraft. They can be fitted with equipment for a range of tasks, including sensing and spraying, and are commonly used in agriculture, infrastructure inspections, 3D mapping and product delivery.

Drones could enhance verification and monitoring activities in both routine and non-routine missions. They could provide real-time data from hard-to-reach or contaminated areas and could even be used for remote sampling tasks.

The availability of UAVs to deliver payloads for permitted purposes (e.g. agricultural) combined with advances in autonomous weapons systems could lead to the development of drones for chemical weapons-delivery purposes.

# 3D Printing



3D printing, or additive manufacturing, uses instructions from a computer-aided design file to build up liquid or solid materials, layer by layer, creating three-dimensional components of varying size and intricacy. One application is in the fabrication of “reactionware”—laboratory-scale 3D-printed chemical reactors.

Not only can 3D printing rapidly provide cost-effective prototype systems for testing new reaction pathways, it can also be used to develop sensors for the detection of chemical warfare agents. Its use in drug delivery could lead to more effective medical countermeasures for chemical weapons exposure.

3D printing could be misused for terrorist purposes to produce improvised devices with a chemical payload and even to print the explosive components. Non-State actors could print parts to encapsulate hazardous or toxic materials for ease of handling as well as avoiding cross border detection.