This year, on 17 June, the Geneva Protocol, an international treaty prohibiting the use of asphyxiating or poisonous gases and bacteriological methods of warfare, turned 80 years of age. It was fostered in part by a 1918 appeal in which the International Committee of the Red Cross (ICRC) described the use of poisonous gas against soldiers as a “barbarous invention which science is bringing to perfection.” Great peacetime advances in chemistry before the First World War made possible the manufacture and use of chlorine, phosgene, and mustard gas on the battlefield. The ICRC foresaw “a struggle the ferocity of which will exceed the greatest barbarity the world has known.”

The 20th century witnessed a continuous accumulation of potential biological and chemical weapons in many nations. Some of these weapons were deployed; for example, in Abyssinia in the 1930s, in China in World War II, in Yemen in 1963, and in the Iran-Iraq war of the 1980s. This gave the impetus to two important international legal regimes: the 1972 Biological Weapons Convention (BWC) and the 1993 Chemical Weapons Convention (CWC). These treaties extended the Geneva Protocol’s prohibition beyond mere use to include the development, production, and transfer of all such weapons.

The scientific community now faces difficult questions. Major advances in chemistry, microbiology, and nuclear physics have, regrettably, led to hostile use of the knowledge and materials from these scientific domains; a use that the original scientist-discoverers would have deplored. What will be the outcome for humanity if the results of the research explosion in life sciences and biotechnology are also turned to hostile use? What are the associated responsibilities of scientists?

Scientists in academia and government recognize that advances in the life sciences and biotechnology could make biological weapons more effective, safer to use, more difficult to detect, and therefore more attractive options for would-be users. The dangers lie in both bioterrorism and in government-backed programs, and robust international mechanisms are required to deter the development, production, transfer, and use of these weapons. This provides the background to the numerous conferences this year discussing biosecurity and for the meeting of experts at the BWC this month in Geneva that is examining proposed codes of conduct for scientists.

These discussions take place against a history of societal norms against biological and chemical weapons that reaches back much further than the 1925 Geneva Protocol. The current treaties represent the development and codification of rules and taboos that for thousands of years have protected people from poisoning and the deliberate spreading of disease. Both Greek and Roman civilizations customarily observed a prohibition on the use of poisons. In 500 B.C., the Manu treaty in India banned such weapons. A millennium later, regulations on the conduct of war drawn from the Koran by the Saracens forbade poisoning. These examples demonstrate that recent treaties banning chemical and biological warfare find a deeper resonance in human history, psychology, and morality.

The ICRC has a mandate to assist and protect victims of war, and for that reason it promotes and strengthens international humanitarian law. Prompted by scientists’ concerns about the future, the ICRC issued an appeal in September 2002 to governments and anyone working in the life sciences or biotechnology. It aimed to create a culture of responsibility that is coherent with current developments in scientific ethics and existing law.

Scientists must be aware of the importance of their own work in upholding and developing international law; in particular, the BWC and the CWC. They should make every effort to ensure that the outcome of their research serves only to advance humanity. Scientists have a special responsibility to advise governments objectively and to collaborate with others—lawyers, diplomats, and the military—to secure a world in which nobody risks being subject to poisoning and the deliberate spreading of disease.

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