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TECHNOLOGICAL DEVELOPMENT AND INDUSTRY INSPECTIONS

Introduction

1. An important feature of the Chemical Weapons Convention (hereinafter “the Convention”) is its comprehensive scope regarding chemical compounds. A toxic chemical is defined through its intended purpose, and not through its specific chemical structure. Hence, it is the purpose of the manufacturing of a chemical compound or the use of certain technologies that determine whether an activity is prohibited under the Convention. This definition is often referred to as the “general purpose criterion”. The main advantage of this criterion is that the Convention is not restricted to certain lists of chemical compounds. Furthermore, this approach ensures that the Convention will not become outdated with future technological and scientific development.
2. Many toxic chemicals have legitimate uses in industry and in medical and scientific applications. In approaching the definitions of toxic chemicals with the general purpose criterion, it is possible to handle the problem of the dual-use nature of many chemical compounds in a constructive manner, and thereby not hamper the technological development or the civilian use of toxic chemicals.
3. During the last five years, the Organisation for the Prohibition of Chemical Weapons (OPCW) has devoted great efforts to making an inventory of former chemical weapons and chemical weapons production capabilities throughout the world. The OPCW has achieved great accuracy in this task, which continues to be important for the organisation. However, as already existing chemical weapons are accounted for, an increasing effort could be directed towards preventing further development of chemical warfare agents and chemical weapons around the world.
4. In this context, an important factor to take into account is technological and scientific development within the field of chemistry and other relevant neighbouring disciplines. Technological developments within the chemical industry, together with the scientific understanding of life processes, among other things, have historically been important platforms for the development of new chemical weapons (CW) agents.



Technological and scientific development

5. Today, one of the challenges for the Convention is the rapid scientific and industrial development in the area of chemistry and life sciences. During the last few years there has been tremendous development in the methods for finding, designing, testing and producing chemical compounds. One sector affected by this ongoing change is the pharmaceutical industry but an equivalent trend can be found in other chemical industries.
6. In its search for new compounds, the chemical industry is turning increasingly to what is known as Combinatorial Chemistry, allied to High Throughput Screening.. This involves techniques developed for the purpose of identifying substances that affect many of the organism's vital functions. Many toxic compounds explored in this design process are of no interest to the chemical industry, but can find use as new and potent CW agents. It seems obvious, therefore, that this search will inevitably uncover many structures with highly toxic properties which, in less scrupulous hands, could well be used in the development of new CW agents.
7. Technological development that can be redirected towards the development of new CW agents is not necessarily confined to official national chemical weapons programmes. The initial work could very well take place in the industry, without the company concerned having the slightest intention of becoming involved in the field of chemical warfare. This is a definite possibility, and one that became increasingly real during the 1990s. Furthermore, toxic compounds of biological origin, such as toxins, which in the past have been difficult to produce, can now be manufactured in substantial quantities at a significantly reduced cost.
8. The increased pace in the development of new chemical compounds is reflected in the chemical industry. During recent years the industrial production of chemicals has become much more automated and flexible, and many chemical production plants can today rapidly switch from producing one chemical compound to another. It has therefore, in part, become more difficult to accurately recognise industries that are of relevance in the context of the Convention. In some instances, production facilities covered under Article VI, paragraph 6 and specified in Part IX of the Verification Annex to the Convention ("other chemical production facilities") might be of more relevance to the Convention in this respect than Schedule 1, 2 and 3 production facilities.

Conclusions

- The "general purpose criterion" ensures that the Convention will stay relevant regardless of the technological development;
- As the existing chemical weapon programmes are gradually being checked and accounted for through the ongoing work of OPCW, more efforts could be directed towards preventing future development of CW agents;

- The chemical industry is changing to more flexible, versatile production units. It could be argued that these multi-purpose chemical plants are of greater concern to Convention than plants capable of producing only a few well-defined compounds;
- Consideration should be given increasingly to focusing future inspections under Article VI on discrete organic chemical production units (DOCs) and so-called PSF facilities, while recognising the continuing importance of inspections of Schedule 1, 2 and 3 facilities and plants; and
- Furthermore, it is of high importance that scientific and technological development within the chemical industry be adequately reflected in the training and recruitment of inspector personnel. Ensuring that the OPCWs personnel are trained to meet the latest technological developments within the chemical industry is a key factor for recognising future activities relevant to the Convention.

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