

To find such very specific toxic activities, equally specific testing methods are needed for objective evaluation of the effects on man. These methods are not based on accepted toxicological techniques; the discrete regulatory mechanisms and cell-interactions ought to be studied. For research as well as for routine purposes they are performed by microbiological, not by toxicological laboratories.

Another important fact is that in spite of much effort spent on these problems, the chemical structure of majority of toxic substances has not yet been deciphered. In the protein toxins some typical aminoacid components were identified (e.g. in botulin and tetanotoxin), but the molecular groups determining the specific biological activities are not known.

In addition to all these factors emerging from deeper understanding of micro-organisms and of infectious disease, it should be stressed that the current understanding of the term "toxins" has also become substantially broader. It actually shifted to a vast variety of metabolic products of many species of micro-organisms as well as of higher living organisms (plants, mushrooms, snakes, etc.), with a great diversity of damaging biological activities.

Many of these products are not of protein nature; their molecule has a more simple structure, and there is an increasing list of toxins whose chemical formula has been already recognized (e.g. saxitoxin, tarichatoxin, tetrodotoxin, bufotoxin, urare, strychnin, muscarin...). Substances of such simple chemical structure are not able to stimulate the antibody production. With respect to chemical structure (and hence also to their antigenicity), these toxic substances clearly differ from bacterial toxins. Clear enough, also, that having their molecule more simple, and better understood, they might become candidates for production by modern methods of chemical synthesis.

For all these reasons, the definition of toxins as a class of chemical substances, based on their chemical structure, is not available (and with present scientific knowledge it is not possible); hence it is not possible to include the toxins into a certain category of chemicals. The only fundamentally important characteristic valid for all toxins is their organic origin plus a kind of prominent biological activity.

Conclusion:

The toxins whatever their origin or method of production have been covered by the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction. The consequence of any other arrangement could be predicted with certainty: undermining the reputation of the BW treaty, and creating a really important "grey area" of ill-defined situations in CW treaty, leading to many misunderstandings, misinterpretations and endless queries.