

and cold trapping the instrumentation affords an easily automated method also for sample collection and preparation. Compounds are reliably identified using retention index monitoring in combination with retention spectrometry (detection limit for sarin at low ng/m^3 level, reliability of identification of known compounds comparable to that of electron ionization mass spectrometry). The instrumentation works well also in field conditions in a field laboratory.

Instrumentation for high-volume air sampling and analysis

10. At the present state of the art, the high-volume air sampling system needs manual sample preparation and sophisticated analytical methods for analysis of possible agents. Thus this method should be integrated into the routine monitoring schemes of existing laboratories already equipped with sophisticated instrumentation, e.g. environmental laboratories. High recoveries of agents are obtained in spite of the hundreds of organic compounds present in the air as aerosol particles or as a vapour phase.

11. Several sensitive and reliable techniques are available for the identification of agents in high background samples: (1) gas chromatography with selective and sensitive detectors, (2) high pressure liquid chromatography with diode array detection, (3) enzymatic analysis, (4) tandem mass spectrometry, (5) retention spectrometry, and (6) Fourier transform infrared spectrometry used on-line with gas chromatography for sample introduction.

Conclusions

12. A global network of monitoring stations could be used to reveal possible use, field tests of agents, and transport accidents. Clandestine production and stockpiles of chemical weapons would be revealed only in the event of leaks of agents due to faults in handling or aging of the munitions. If such a monitoring network were established, the governments of the States Parties to the Convention could monitor the compliance in their own countries and the possible atmospheric transport of agents from other countries.