

J137(G76)

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Proposal Abstract J137(G76)

1. **Arms Control Problem:**
Chemical weapons - research and development
2. **Verification Type:**
Remote sensors - sampling
3. **Source:**
United Kingdom. "Working paper on the feasibility of extraterritorial surveillance of chemical weapon tests by air monitoring at the border". CCD/502/Corr. 1, 2 July 1976.
4. **Summary:**

Two possible methods of remote verification of CW field tests involve the use of:

 - (1) satellites (discussed in CCD/371*), and
 - (2) ground stations situated outside national boundaries and equipped to detect CW agents in air masses which passed over areas where the weapons were thought to be tested.

Once a reliable indication of a violation had been obtained by the above techniques, on-site inspection would be called for. This paper assesses the second method's feasibility.

A number of analytical methods of monitoring air are presented (Appendix A of the working paper). It is concluded that the most sensitive method of instantaneous monitoring with a capability for identification is the Fourier infra-red technique similar to that which might be used on a satellite. The most sensitive system for sample accumulation with subsequent analysis would combine a highly efficient sampler with gas chromatographic analysis using a specific phosphorus detector.

An assessment of these techniques' chances of success if made using calculations based on general meteorological knowledge and conditions around three sites in particular. It is concluded that:

 - (1) Detection of a field test by instantaneous monitoring of air at a national boundary is not feasible at a distance of 10,000 km from the source and could probably not be achieved beyond a distance of 500 km.
 - (2) A sample accumulation system might theoretically detect an organophosphorous compound in a puff released 10,000 km upwind. But this conclusion still requires further study.

* See abstract J136(G72)