

4. Off-site laboratory

The level of sophistication of instruments in an off-site laboratory depends on the types of samples expected to be analyzed and the analytical task, either routine or research-oriented, identification of known compounds or structure elucidation of unknown compounds. Analysis of samples from stockpiles, destruction facilities and single small-scale facilities does not require highly sophisticated instrumentation because of the high concentration of compounds expected in the samples. Samples collected in cases of alleged use or challenge inspections to other targets may require selectivity and sensitivity achievable only with the most sophisticated instrumentation presently available.

The most important analytical methods will be mass spectrometry (MS), Fourier transform infrared spectrometry (FTIR) and nuclear magnetic resonance spectrometry (NMR). Chromatographic techniques such as gas chromatography, liquid chromatography and, for the future, supercritical fluid chromatography, are used for preliminary screening and for on-line separation of agents from matrix compounds. At least two spectrometric techniques, preferably three, are required for unambiguous identification. It is preferred to use a combination of MS and FTIR over MS/MS and high resolution MS.

The experts considered the presently available instrumentation for an off-site laboratory to be of the state of the art for the chemicals listed in Schedules 1, 2, and 3. Novel agents may require new types of instrumentation. The difficulty is to recognize that a chemical is a novel agent.

The analytical instruments were considered to be the same regardless of the type of inspection, whether routine or challenge. The analysis request may be to monitor known compounds, to confirm preliminary identifications, and for structure elucidation of unknown compounds.

The group considered not to be necessary to go into more details of the off-site equipment, e.g. to various instrument types on the market or to more details of the techniques which could be used with each instrument type.