APPENDIX III

METHODS FOR DETECTING CHEMICAL AGENTS

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[In some cases the presentation has been condensed or paraphrased.]

Many different technologies are being used to detect chemical agents as vapours and, in some cases, in solid and liquid aerosols. As mentioned previously, detectors can be divided up by function -- that is, whether they are used as alarms, monitors or identifiers.

Wet chemistry

There is a simple, standard method still being used by most armed forces. The Canadian Forces use a C2 detector kit which passes air over a special absorbent material. Certain chemical solutions are then added. If there is a small amount of an agent trapped in the absorbent material, it will react with the chemical solutions. The appearance of a coloured material reveals the presence of the agent. Unfortunately, it is difficult to maintain this type of kit for long periods and it cannot be automated for use on the battlefield.

Enzyme ticket

This is another common wet chemistry technique for detection of nerve agents. Nerve agents kill be inhibiting a specific enzyme necessary for proper nerve function. Samples of that enzyme, extracted from a cow or eel, can be dried on a piece of paper. To detect a nerve agent, just wet the paper, wave it in the air, and then add some other detector chemicals. This is a very sensitive method which has been automated and used as a CW alarm.

Ion mobility spectrometry

A more modern technology is being used in the United Kingdom as a monitor. The molecules of nerve agent or mustard gas are ionized by a small radioactive source and the