

wastes, e.g. organochlorine waste, 4/ by incineration at high sea. The Vulcamus was expected to be near Java in the beginning of 1979. However, the transport of the mustard from Batujajar over a distance of about 200 km through the densely populated areas of West-Java to the Tanjung Priok Harbour of Jakarta was considered to be too great a risk. This precluded also ocean dumping, which is generally considered unacceptable for several other reasons as well. 1/ On-site destruction was therefore necessary.

7. The following criteria were used in determining the method of destruction.

- (a) the process must be effective in destroying the mustard completely;
- (b) the process must be safe to operate and present no danger to the population in the vicinity;
- (c) the process must be environmentally acceptable;
- (d) the process must be able to operate under the Batujajar circumstances, e.g. restrictions on energy, water and materials supplies; availability of a large flat non-populated artillery shooting range, surrounded by settlements and adjacent to the storage site.

8. Open pit burning was environmentally unacceptable because of the resulting air pollution and would have presented an unacceptable risk to the neighbouring population.

9. Decontamination by reaction with Standard Tropical Bleach or the decontaminant DS-2 was considered impracticable inter alia because of the enormous amounts of decontaminants involved and the resulting disposal problem.

10. Miscellaneous methods described in the literature like reaction with sodium sulphide to an insoluble product 5/ or reaction with monoethanolamine (MEA) 6/ were only briefly considered and soon rejected. The first mainly because of the possibility of mustard being trapped in the solid and the disposal problem of the solid, the second because of the large amounts of MEA required (about 350 m³) and the necessity to dispose of the reaction products by incineration.

11. Destruction by hydrolysis in the manner described by Canada, 1/, 7/ was studied and also rejected. Reasons for this were that it would require large amounts of water and neutralizing agent, large heating capacity, good analytical instrumentation for process control, which would all be very difficult to realise under the Batujajar circumstances, but the main reason was the large volume of hydrolysate (estimated at 120 m³) that would have to be disposed of. Eventually the latter problem was solved in Canada by incineration of the hydrolysate, but in this case it seemed more practical to proceed directly to incineration of the mustard.

12. An incineration process has been used in the United States Chemical Agent and Munitions Disposal System (CAMDS). Details of CAMDS have been presented at the experts seminar held by the Ad hoc Working Group on Chemical Weapons in June 1980. More details on mustard destruction are contained in the Final Environmental Impact Statement for Project Eagle 8/ and in a laboratory report. 2/