

CONFERENCE ON DISARMAMENT

CD/1008
CD/CW/WP.298
26 June 1990

Original: ENGLISH

NORWAY

USE OF SORBENT EXTRACTION IN VERIFICATION OF ALLEGED USE OF CHEMICAL WEAPONS

1. INTRODUCTION

An extensive study of the possibility of verifying alleged use of chemical weapons was initiated by the Norwegian Ministry of Foreign Affairs in 1981. The research has been carried out by the Division for Environmental Toxicology of the Norwegian Defence Research Establishment at Kjeller near Oslo. The annual reports and working papers submitted to the Conference on Disarmament have been compiled in the publication Contributions by Norway to the Conference on Disarmament 1982-1987 (document CD/813 dated 7 March 1988).

The 1988 report was mainly concerned with the development of complete procedures for verification of alleged use of chemical weapons. This includes procedures for localization of the contaminated area and for field analyses, sample collection, sample handling, sample preparation and laboratory analyses (CD/857 of 12 August 1988 and CD/861 of 22 August 1988).

The research in 1989 focused on the development and testing of a new, supplementary technique in verification of alleged use of chemical weapons. This technique, headspace gas chromatography, allows liquid and solid samples to be analysed without pretreatment. The headspace technique is a supplement to the sample preparation method developed earlier during the Norwegian research programme, and is of particular advantage in rapid analysis of samples with a high contamination level. The research results are described in document CD/936 of 21 July 1989 and the research report was presented to the Conference with document CD/940 of 31 July 1989.

The sample preparation method developed by the Norwegian research programme is based on the adsorption of chemical warfare agents from aqueous solutions onto a polymer sorbent and its subsequent removal by an organic solvent. This technique, referred to as sorbent extraction, has in the 1989-1990 programme been optimized in order to isolate as efficiently as possible chemical warfare agents and related compounds from different sample materials. The aim of the investigation was to find a general procedure which