

**NUCLEAR TREATY MONITORING
RADIONUCLIDE COLLECTION AND ANALYSIS
BY THE US ATOMIC ENERGY DETECTION SYSTEM**

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ABSTRACT

This talk will provide an overview of radionuclide collection and analysis as a tool for monitoring nuclear weapons testing. Specifically, it will provide a description of the techniques used currently in AFTAC's nuclear treaty monitoring program as part of the United States Atomic Energy Detection System. A description of the particulate and gaseous sample collection equipment used on the ground and in aircraft, as well as the associated laboratory equipment used in the analysis, will be presented. A review of collection and analysis requirements for the Comprehensive Test Ban Treaty (CTBT) from the USAEDS perspective, and implications of CTB implementation on modes of operation will be addressed. Additionally, the talk will review the current status of ongoing field tests of the next generation, automated, ground-based particulate sampler/analyzer, as well as the concepts and status of research and development efforts for the automated, ground-based radioxenon sampler/analyzer. Finally, the talk will cover some of the technical and engineering challenges that still need to be addressed.

Keywords: Radionuclide, CTBT, Comprehensive Test Ban Treaty, Nuclear Test, Radioxenon, USAEDS

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