Nowadays, a preliminary measurement was performed to screen the environmental samples for the presence of important components such as uranium, plutonium, or radio-nuclides, rather than a process sample:

- Non-nuclear materials: smears, vegetation, soil,
- · Environmental: debris, trees, leaves, rocks, ores, water, and
- Materials of construction: graphite, steels, beryllium, lead.

Simultaneous analyses off-site are important. Two specific branches of the IAEA's Seibersdorf Laboratories (SAL: Safeguards Analytical Lab., PCI: Physics, Chemistry and Instrumentation Lab.) have been involved with the analysis of samples balong with the satellite data communications.³⁷

Techniques applied at SAL:

- High-resolution gamma-ray spectrometry,
- Alpha-particle spectrometry,
- X-ray fluorescence spectrometry,
- K-edge densitometry (Hybrid XRF K-edge),
- McDonald/Savage potentionmetric titration,
- NBL modified Davies/Gray potentiometric titration,
- Optical emission spectrometry,
- Thermal ionization mass spectrometry, and
- Isotope dilution mass spectrometry.

Techniques applied in PCI:

- Neutron activation analysis,
- Gamma-ray spectrometry,
- X-ray fluorescence spectrometry,
- Conductivity and pH,
- Laser-excited optical fluorimetry,
- Inductively-coupled plasma atomic emission spectrometry, and
- Alpha-particle spectrometry.

The inspection technology for the CTBT monitoring is based on an international monitoring system, such as the following:

- All-ranges teleseismic monitoring,
- Radio-nuclide monitoring,
- Hydroacoustic monitoring,
- Satellite monitoring,
- Optical monitoring, and
- Electro-Magnetic Pulse monitoring.