The severity of a seismic event is usually expressed in terms of an open-ended scale, named after its inventor, Dr. Charles Richter, in which each successive number represents an additional factor of 10 in the size of the event.

For a hypothetical threshold of Richter 2.7–3.2 and a network of 25–30 regional seismograph stations deployed by common consent throughout the USA and the USSR, only 80 per cent of all recorded events would eventually be categorized as being of nuclear or natural origin. That leaves much scope for false alarms and the possibility that if nuclear tests of a very small or sub-kilotonne range were conducted, they might not be identified.

On the basis of these kinds of uncertainty, some authorities assert that a verifiable comprehensive test ban treaty is impossible. Such critics say that no monitoring technology currently foreseen can offer absolute assurance that very small-yield, illicit nuclear explosions would not go unnoticed.

This gap in the ability to detect and identify underground nuclear explosions emphasizes the need to press for adequate in-country detection networks and underlines the desirability of provisions for on-site inspections.

Practicality

Scientists are quick to stress that quite apart from detecting and identifying underground tests with a degree of precision, there exists another major consideration: *practicality*. It is no exaggeration to say that, within the range of any given seismograph station, many thousands of events will occur in the course of a year. The process of monitoring and analysing all of them and re-analysing suspicious events in the context of additional data from other sources would be horrendous, notes Dr. Basham. But many still point out that, if the achievement of this objective could discourage further testing of nuclear weapons, it might still be worthwhile.