ID: Type: **Oral**

Gases Release after Underground Nuclear Explosions

Monday, 24 June 2019 15:45 (15 minutes)

Underground nuclear explosion may be follow of the noble gases release. 493 underground nuclear tests and explosions of different purposes and in the different rocks were conducted in the Soviet Union over period in 1961-1990. A total of 340 underground nuclear tests were conducted at the Semipalatinsk Test Site. 179 explosions (52.6%) among them were classified as these of complete containment, 145 explosions (42.6%) as explosions with weak release of radioactive noble gases (RNG), 12 explosions (3.5%) as explosions with non-standard radiation situation. Thirty-nine nuclear tests had been conducted at the Novaya Zemlya Test Site; six of them – in shafts (vertical boreholes) and 33 tests in the horizontal tunnels. In 14 tests (36%) there were no RNG release. Twenty-three tests have been accompanied by RNG release into the atmosphere without residual contamination. Nonstandard radiation situation occurred in two tests. In incomplete containment explosions both early-time RNG release (up to ~1 h) and late-time release from 1 to 28 h after the explosion were observed. Sometimes gas release took place for several days, and it occurred either through tunnel portal or epicentral zone, depending on atmospheric air temperature and pressure. Figures of stemming complexes will presented.

Primary author: DUBASOV, Yurii (Khlopin Radium Institute)

Presenter: DUBASOV, Yurii (Khlopin Radium Institute)

Session Classification: T2.5 Historical Data from Nuclear Test Monitoring

Track Classification: Theme 2. Events and Nuclear Test Sites