

Migration of Noble Gas Tracer of Underground Nuclear Testing

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Cyclical changes in barometric pressure can draw gas upward out of the soil into the atmosphere. In fractured permeable medium, the resulting transport process may be of orders of magnitude more significant than molecular diffusion [1]. Clandestine underground nuclear tests produces at depth of several hundred meters radionuclides, which migrate to the surface induced by this atmospheric pumping. A deep understanding of the transport mechanism is needful to state the estimated time of arrival for on-site inspectors of the CTBTO.

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References

- [1] R. H. Nilson, E. W. Peterson, and K.H. Lie, N. R. Burkhard and J. R. Hearst, Atmospheric Pumping: A Mechanism Causing Vertical Transport of Contaminated Gases Through Fractured Permeable Media, *J. Geophys. Res.*, Vol. 96, No. B13, 21.933-21.948, Dec 1991