# Questions Regarding Migration to Ground Water

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(slides created upon request)

# Q: What progress has NJDEP made in researching and investigating the issue of chemical degradation in soil migration to ground water analyses?

A: NJDEP has not dedicated resources to this research at this time. Degradations rates vary greatly and involve many site-specific conditions. This research is not a Department priority at this time, however research conducted by academic universities or other institutions may be considered in the future (current rule does not expire until March 24, 2029).

# Q: What information has NJDEP developed on potentially acceptable degradation rates and/or acceptable methods of estimating those degradation rates?

A: Biodegradation is a highly variable, highly site-specific parameter that is not amenable to routine determination in the unsaturated soil zone without research-level investigation. There is far too much variability to specify an acceptable degradation rate to include in the Migration to Groundwater Technical Guidance and remain adequately protective to human health and the environment.

The ARS-MGW Technical Guidance already allows in the SESOIL model options the use of a default half-life of 1 month for volatile hydrocarbons (including BTEX, naphthalene and 2-methylnaphthalene) because they generally exhibit fairly rapid degradation in the soil. Based on a review of reported unsaturated soil zone degradation rates, a one-month half-life was judged to be adequately protective for these contaminants.

# Q: What is NJDEP's current position or thinking on inclusion of chemical degradation in migration to groundwater analyses?

A: The Department does not allow for contaminant degradation. The exception applies to the previously stated exceptions for the SESOIL model options (DeVaull et al., 2002; Howard et al., 1991). The Department does allow for multiple other physical and chemical processes, that are less variable, to be considered in calculating Alternative Remediation Standards (ARS), including:

- Altering the Dilution Attenuation Factor
- Adding volatilization for VOCs in the SESOIL and SESOIL/AT-123D model when soil texture is measured
- Allowing for measured or calculated site-specific partitioning coefficient values ($K_d$ or $K_{oc}$)
- Modifying the organic carbon percentage

Refer to Guidance for which parameters apply to which options.

# Questions?