

## 1.2 Anaerobic Biodegradation

Non-oxygen using micro-organisms

Nutrients: Nitrates, Sulfates,  $\text{CO}_2$ , Ferric Iron, Metal oxides

### Field Processes

Same as for aerobic but no  $\text{O}_2$  added/needed  $\therefore$  no sparger

Subsurface usually anaerobic  $\therefore$  a natural method.

### Demonstration Level

Naturally occurring degradation

Field studies: Creosote (St. Louis Park, NM)

Carbon Tet, TCA, Freon (Hoffett Field, CA)

Especially in zone close to injection.

### Applicability/Limitations

- o Affects aqueous phase only (not free product)
- o Sorbed products removed via aqueous phase (reversible)
- o Intermediate transformation products may be toxic
  - eg. Vinyl chloride is a by-product that poses more hazard than the original product (TCE)?
  - This is reason why aerobic processes preferred

### Cost and Availability

- o In situ anaerobic is naturally occurring
- o Full scale application - discouraged - toxic by-products
- o \$15-60/ $\text{yd}^2$