BACKGROUND CONCENTRATIONS

Use in EPA Risk Assessments

(R8, G. Henningsen, 1999)

- **Approach considerations**:

  T Select background samples from appropriate "**reference**" areas and times

  T Collect **representative** samples, based on *exposure units* or *home-ranges* for each media of concern, generally to compare on-site vs off-site levels

  T Use in *exposure assessment* (vs remedial needs) to ***screen*** COCs and/or to determine ***incremental*** *risks* above background for ubiquitous COCs

- **Statistical considerations**:

  < meet *assumptions*: random, independent, equal variance, parametric or not

  < background *sample sizes*: determine considerations of test criteria; e.g., if

  1) **n < 5**: use 95% LCL of mean background samples vs site average

  2) **n = 5 to 30**: use 1-tail t-test (or non-parametric test if indicated) to compare background samples to corresponding site samples

  3) **n > 30**: use 95th percentile of background vs site 95% UCL of mean

- **Cautions**:

  S UTL (upper tolerance limit) is usually only appropriate for water sample testing
  S replicates collected at various depths are not independent location samples
  S method quantitation limits (MQL) must be less than background concs.
  S Regional SCS Soil Concentrations: often misused, vs proper use by locality
  S attempts to falsely elevate background concs. to screen out more COCs