Groundwater Statistical Analysis

1. The groundwater monitoring requirements in Subpart F of 40 CFR Part 264 and Part 265 require statistical comparisons between the initial upgradient (background) concentrations and downgradient concentrations of indicator parameters and/or hazardous waste constituents. For permitted facilities, §264.97(h) requires that such statistical analysis be done using a 0.05 level of significance, while §265.93(b) requires that interim status facilities perform such statistical analysis using a 0.01 level of significance. Why is the level of significance used in the Student's t-test (statistical analysis of ground-water data) in Subpart F of Part 265 different from that used in Part 264?

   The Agency changed the interim status Student's t-test level of significance from 0.05 to 0.01 in response to public comments received when the rule was first proposed. This level of significance and its effect on the required groundwater monitoring statistical analysts is discussed on pages 33195 - 33196 in the May 19, 1980, Federal Register (47 FR 32274) and on pages 32302 - 32304 in the July 26, 1982, Federal Register (47 FR 32274). The change to a 0.01 level of significance made the interim status Student's t-test more lenient which decreased the probability of "false positives." A false positive indicates a statistically significant increase in an indicator parameter when there is none. If an owner/operator does detect a statistically significant increase, he must determine whether it is false positive by obtaining more samples for analysis (§265.93(c)(2) ). The Part 264 statistical analysis permit standards, which are more stringent due to the higher level of significance (0.05), also have a double-check resample procedure to determine if a false positive occurred (§264.97(h) (l) (i) and (ii) ).

   SOURCE: Theo Zeizig (202) 382-4496

BOOZ ALLEN & HAMILTON, INC.
FAXBACK 12386