

pH, Conductivity and Sulfate

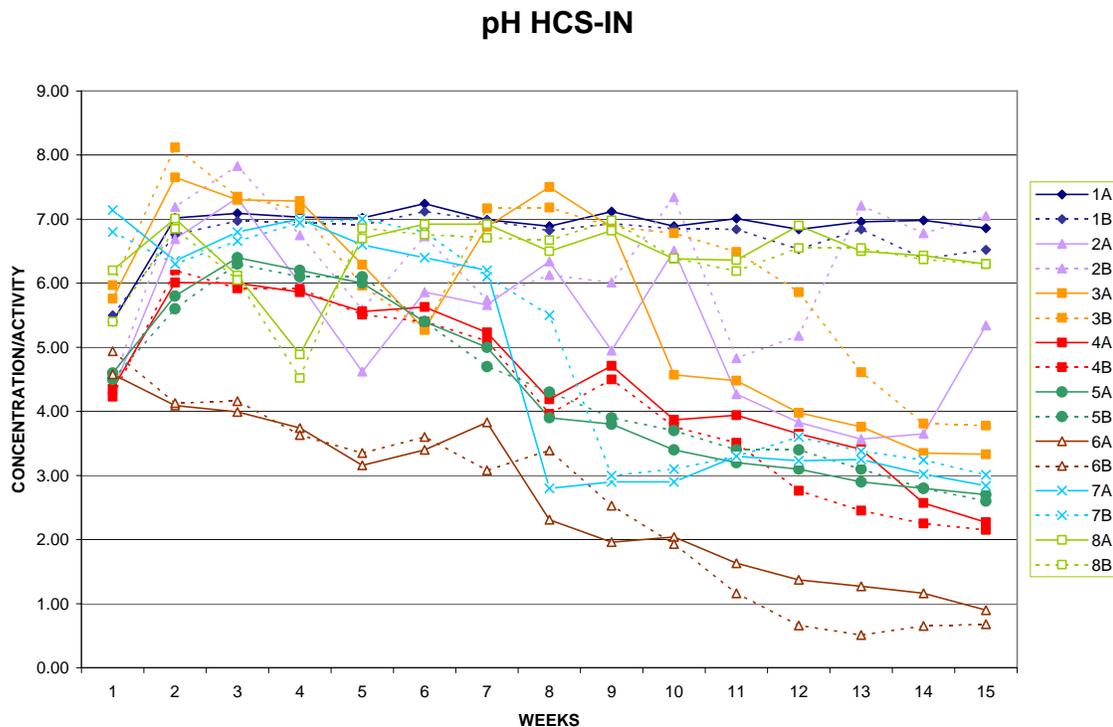


Figure 7.7. pH variations of the Houchin Creek Shale leachate.

The pH of leachate from the leaching columns containing the Houchin Creek shale from Indiana is shown in Figure 7.7. The median pH of the sixteen leaching columns ranged from 2.18 to 7.00. Figure 7.5a shows considerable variation in pH behavior among labs. The pH in Lab 1 remained constantly near 7.0 throughout the 14 week leaching period and there is a close alignment of the duplicate columns. Lab 8 exhibited pH behavior in a manner similar to Lab 1. In Lab 6 there was a steady decline in pH from pH 5 at the start of the weathering test, to a pH below 1.0 in both duplicates by week 14. Labs 2, 3, 4 and 5 also showed a decline in pH throughout the test period, but generally were above pH 5.0 for the first seven weeks of the test period, and then declined to the pH 2 to pH 3 range by the end of the weathering test. Extremely high acidity values of 16,000 mg/l and 12,000 mg/l were produced in week 14 in Lab 4, and corresponding sulfate values of 8,130 and 5,630 mg/l in Lab 4, and 20,600 mg/l in Lab 6, week 14.

The plot of sulfate in Figure 7.8 gives the appearance that some carbonate minerals were present in the leaching column for the first seven weeks of the weathering test, but became overwhelmed by acidity production from the high sulfur content and took off for the remainder of the weathering period in three of the labs (Labs 4, 5 & 6).