

Each flush begins with fresh water so that the initial concentration is supposed to be zero. However, considerable water remains on mineral surfaces so that there is some, unknown, initial concentration. Concentrations rise rapidly as the weathering products accumulated from the previous six-day weathering cycle are dissolved and extracted (Fig. 7.4). Only the final concentrations, obtained when the columns are drained, were analyzed so the shapes of the curves in Figure 7.4 are completely schematic.

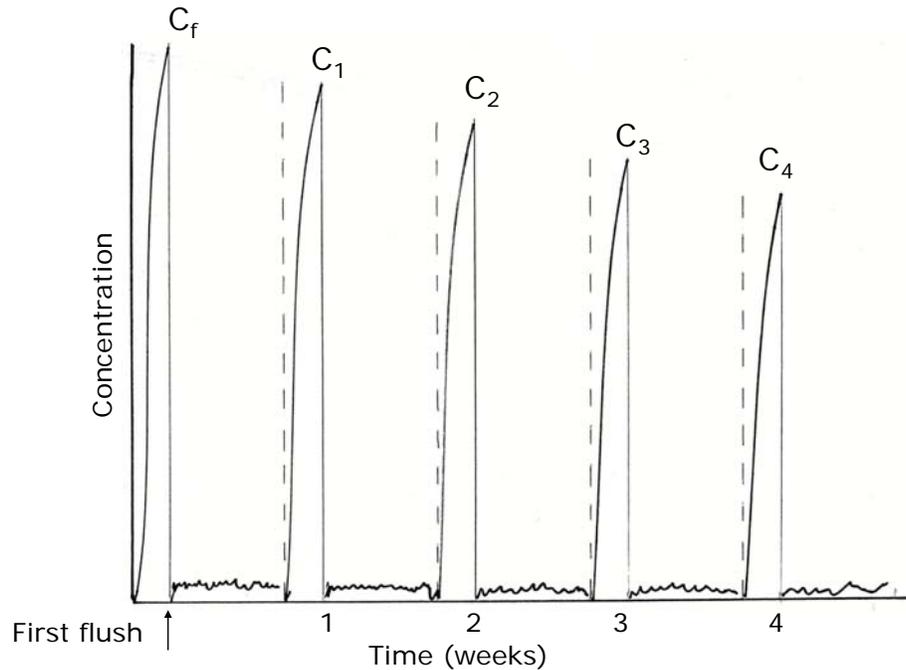


Figure 7.4. Schematic drawing of expected leaching curves from the experimental columns. The peak values, C_f to C_4 would be the instantaneous weekly concentrations which would be added to construct the cumulative curves.

Overview of Column Leach Analytical Data

The input for further analysis is the collected analytical data from the participating laboratories for the five rock types. This section examines several aspects of variations in the leaching column data from the 9 leaching columns in each of the eight participating laboratories, wherein 5 different rock sample types were tested for fourteen parameters of leachate chemistry on a weekly basis for 14 weeks. The chemical parameters are: pH, specific conductance, acidity, alkalinity, sulfate and nine metals: iron (Fe), manganese (Mn), aluminum (Al), calcium (Ca), magnesium (Mg), sodium (Na), potassium (K), selenium (Se) and zinc (Zn). Each of the eight labs conducted weekly chemical analyses of pH, conductivity, alkalinity and acidity, and were instructed to maintain daily records of room temperature, rate of gas flow through the columns, and carbon dioxide content of the gas exiting from the leaching columns. The chemical analyses of the 9 metals and sulfate for 7 of the labs were conducted by Prochem Analytical, an EPA contractor, on leachate aliquots sent to Prochem by each of the 7 labs.