

Attachment 1

Table 3. Kinetic acid mine drainage prediction techniques

Test	Description	Laboratory cost per test*	References
1. B.C. Research Confirmation Test	Sample placed in 250 ml Erlenmeyer flask with 70 ml nutrient media, culture of <i>Thiobacillus ferrooxidans</i> at pH 2.2-2.5. Flask placed on gyratory shaker at 35°C in CO ₂ enriched atmosphere pH monitored and additional sample added. If pH rises substantially, then sample nonacid producer. If pH remains low, then sample potential acid producer.	\$300	Bruynesteyn and Duncan (1979) Bruynesteyn and Hackl (1984)
2. Shake flasks	Sample placed in 1 liter Erlenmeyer flask with 600 ml water or nutrient solution. Series of samples tested at various starting pH, inoculation, and temperature. Samples incubated for up to 3 months. Leachates analyzed weekly and bi-weekly for range of parameters.	\$1500 to \$3500	Davidge (1984) Halbert et al. (1983)
3. Soxhlet reactor	Standard or modified Soxhlet reactor used. Water placed in reservoir, vaporized and passed into condenser. Condensed liquid drips into thimble with sample and then back into the reservoir. Leachates analyzed after 64-192 h for a range of parameters.	\$100 to \$300	Sullivan and Sobek (1982) Renton (1983)
4. Humidity cell	Sample placed in plexiglass container connected to humidified air. Dry air passed over sample for 3 days, humidified air for 3 days, and 200 ml water added on seventh day. Leachate removed and analyzed for range of parameters. Procedure repeated for 8-10 weeks.	\$100 to \$500	Caruccio et al. (1977) Caruccio et al. (1980)
5. Columns/lysimeters	Sample placed in column and periodically leached by distilled water. Samples of leachate analyzed for range of parameters. Usually leached for 8-10 weeks minimum. Several variations of setup and leaching procedures in literature.	\$500 to \$1500	Sturey et al. (1982) Apel (1983) Ritcey and Silver (1981)
6. Test plots/pits/piles	Run of mine or modified sample placed on impervious surface. Precipitation provides leachate which is collected. Samples of collected leachate analyzed for range of parameters. Test usually run for at least 1 year.	\$100 to \$25000	Eger et al. (1981) Murray and Okuhara (1980)

*1985 United States dollars.