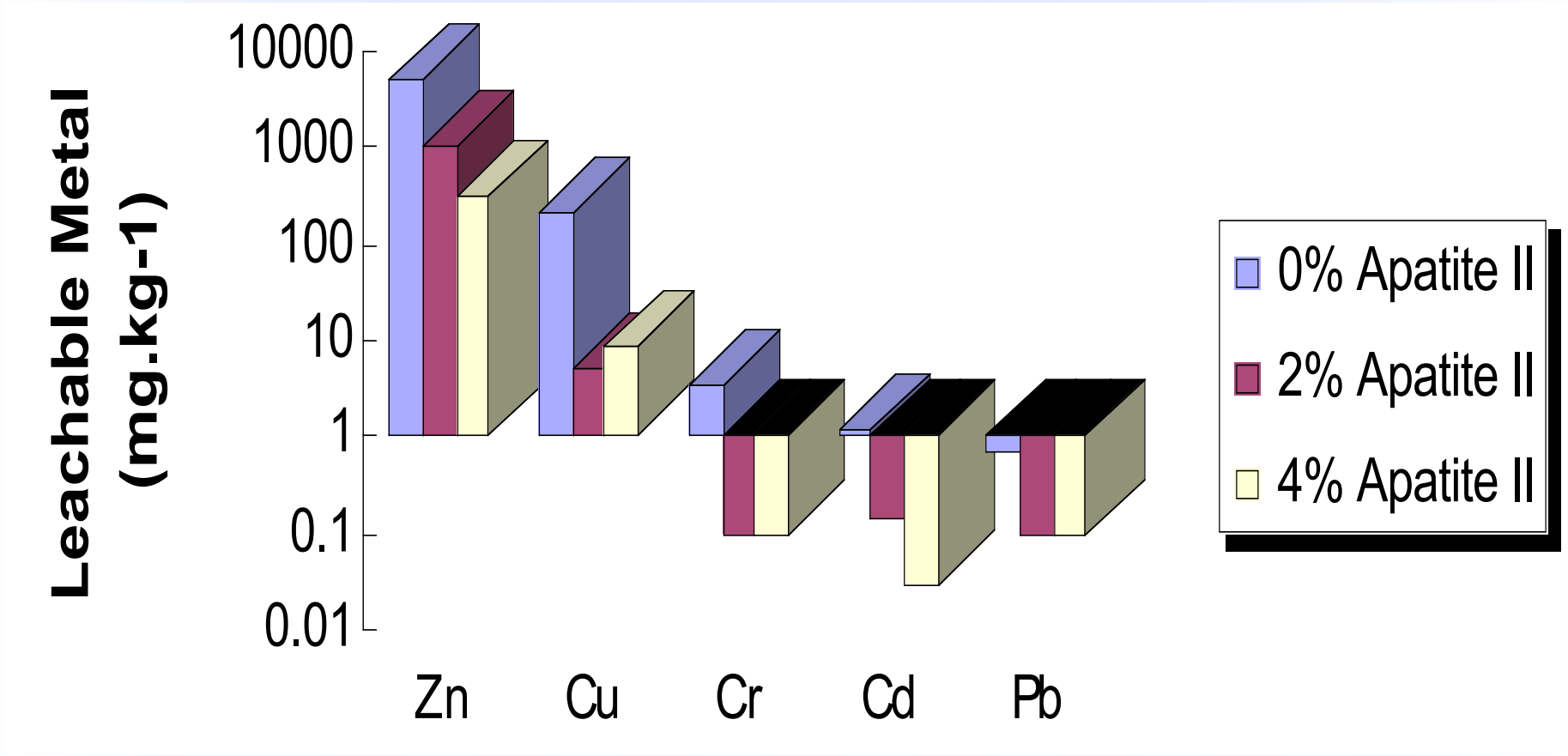
Case History: British Fertilizer Plant

- Highly acidic soil (pH 2.5)
- Multiple metal contamination:

  Zn 4670, Pb 1800, Cu 260, Cr 20, Cd 8 $mg.kg^{-1}$
- Pilot scale test:

  soil mixed with 0%, 2% or 4% Apatite II
- Monitor leachable metal

Fertilizer Plant - pilot data (week 8)



Untreated soil from an industrial site with >10,000 ppm Zn, consistently barren to all plant species attempted; lettuce, geranium, char, fescue, clover and lolium (shown here) while the Apatite-treated (5%) soil was prolific to all species.

Plant growth studies show that the addition of 5% Apatite II by weight to the soil reduces the toxic effects of many contaminants

Nevada Stewart Mine Adit Apatite II PRB (Zn-contaminated outflow)

animal toxicity studies: *Ceriodaphnia dubia*, a freshwater invertebrate

by the Idaho DEQ *Pimephales promelas*, the fathead minnow

Untreated outflow:

No Observed Acute Effect Level (NOAEL)

= 1.6% for *C. dubia* (completely lethal)

= 12.5% for *P. promelas* (highly lethal)

Fifty-percent Lethal Concentration (LC_{50})

= 2.2% for *C. dubia*

= 26.4% for *P. promelas*

after Apatite II PRB:

No Observed Acute Effect Level (NOAEL)

= 100% for *C. dubia* (completely non-lethal)

= 100% for *P. promelas* (completely non- lethal)

Fifty-percent Lethal Concentration (LC_{50})

= 95% for *C. dubia* (completely lethal)

= 100% for *P. promelas* (highly lethal)

no different than the control samples.