

Leaching of NORM and toxic metals from alum shale under oxic and anoxic conditions

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Alum shale and road construction

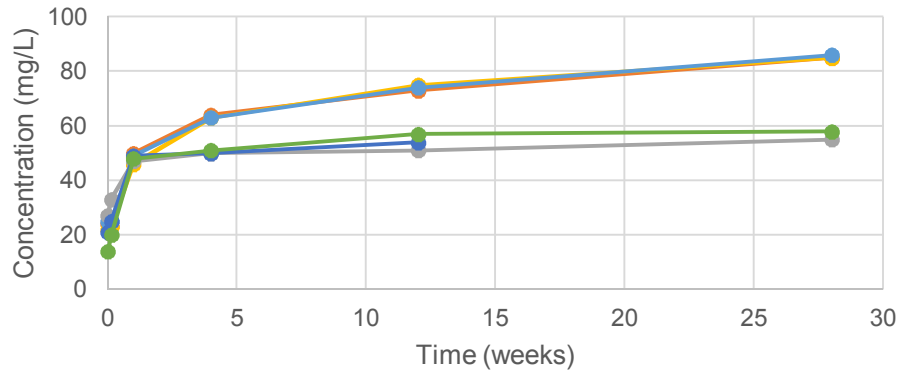
- New tunnel at Gran, Rv4, Norway
- Sedimentary rock formed under reducing conditions
- Sulphides in the rock can be oxidized
- Environmental concerns
 - NORM
 - Toxic metals
- NORWAT project funded by the Norwegian Public Road Administration
 - Leaching experiments with oxic and anoxic conditions



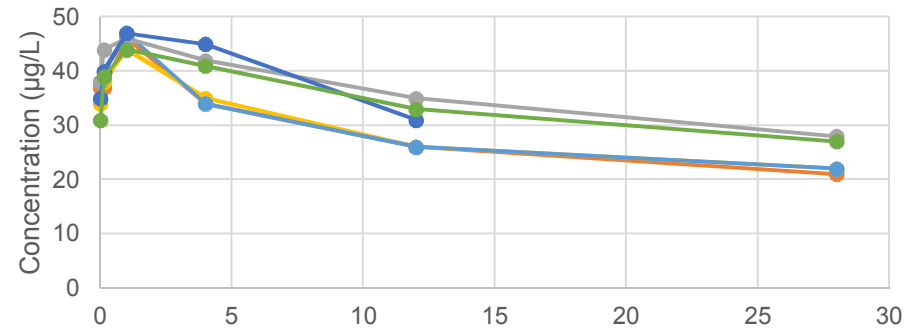
Leaching with time



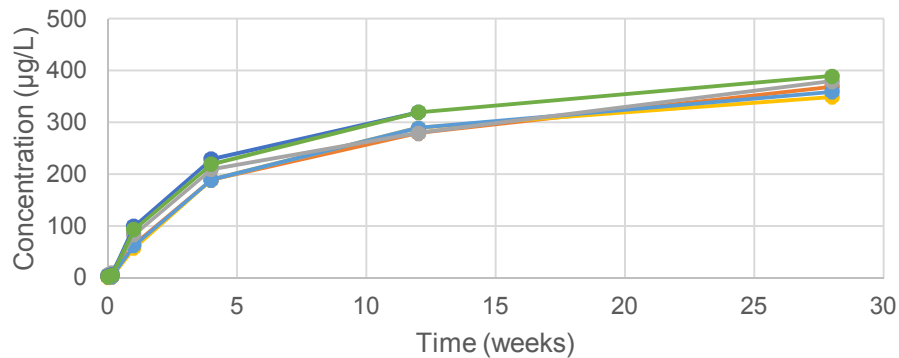
Sulphur



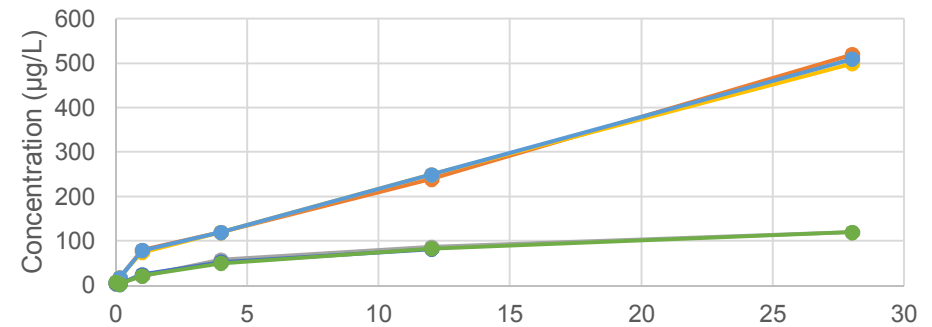
Barium



Uranium



Zinc



● Oxic: A 0.45 µm
 ● Oxic: B 0.45 µm
 ● Oxic: C 0.45 µm
● Anoxic: A 0.45 µm
 ● Anoxic: B 0.45 µm
 ● Anoxic: C 0.45 µm