

# Can hydrogen sulphide gas be produced during alkaline leach of enargitic copper concentrates?

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© 2019 Elsevier B.V. The usual answer to the question stated in the title of this manuscript would be a definitive no due to the high stability of dissolved sulphide ions in water under strong alkaline conditions; nevertheless, experimental results presented in this research shows the opposite. Two arsenic-bearing copper concentrates coming from two different Chilean mine sites were used to carry out alkaline sulphide leach experiments. One of them (Concentrate 1) exhibits a P 80 of 45  $\mu\text{m}$  and 3.8% arsenic while the other (Concentrate 2) has a P 80 of 98  $\mu\text{m}$  and 2.3% arsenic. The arsenic extractions at 60 and 90 °C after 2 h reaction for concentrates 1 and 2 are around 10 and 80% and 14 and 93%, respectively. More relevantly, notwithstanding the strong alkaline conditions used in the experiments, the production of toxic hydrogen sulphide gas was detected and measured in tests performed at 90 °C. The molar ratio between the arsenic leached and the formation of hydrogen sulphide is 20:1 an