

Ringkasan

Di daerah Majenang Kabupaten Cilacap terdapat mineralisasi berupa urat kuarsa mengandung bijih emas dengan mineral asosiasi berupa pirit, kalkopirit, galena, dan sfalerit dengan ketebalan urat bijih emas antara 20-25 cm dengan arah jurus/kemiringan N275°E/40°-45°. Lokasi ini cukup potensial untuk dikembangkan. Jumlah sumberdaya bijih emas belum diketahui pasti, namun telah ada beberapa penambangan rakyat. Penambangan dan pengolahan emas tersebut tidak memperhatikan aspek lingkungan sehingga tercipta kondisi tidak aman pada lubang penggalian dan limbah yang berpotensi menyebabkan pencemaran.

Tesis ini bertujuan membuat desain pengolahan emas yang berwawasan lingkungan. Batasan masalah adalah metode penambangan rakyat dengan peralatan sederhana dengan pengolahan amalgamasi dan sianidasi. Metode penelitian meliputi studi literatur, penelitian lapangan, pengolahan data, dan perhitungan kebutuhan air hingga diperoleh desain settling pond yang berwawasan lingkungan.

Hasil penelitian menunjukkan pengolahan emas metode amalgamasi membutuhkan air sebanyak 630 liter dalam waktu 5 - 6 jam. Ukuran kolam pengendapan dengan pendekatan Hukum *Stokes* adalah panjang 4m, lebar 2m, dan kedalaman 1m, dengan umur kolam 7hari. Hasil tailing dengan metode amalgamasi diolah dengan menggunakan metode sianidasi, cukup menguntungkan. Alternatif pengolahan menggunakan metode sianidasi dengan memakai *tailing* hasil dari pengolahan amalgamasi, menarik untuk dikembangkan.

Pengolahan emas yang dikelola oleh tambang rakyat disarankan tidak menggunakan metode sianidasi. Desain *settling pond* pada tambang rakyat disarankan untuk penambahan kolam dengan pemberian batuan zeolit dan tanaman enceng gondok untuk memaksimalkan pengurangan kandungan logam berat sebelum air hasil pengolahan dialirkan ke sungai.

Abstract

In the area of the Majenang District, Cilacap Regency, there is a mineralized quartz veins containing gold ore, the mineral associations in the form of pyrite, chalcopyrite, galena, and sphalerite, with the thickness of the veins of gold ore about 20-25cm. The direction of the strike and dip is $N275^{\circ}E/40-45^{\circ}$. This location is very potential to be developed. The number of gold ore resource is unknown, however there has been some local people mining. Mining and processing of gold, which is managed by the local people, which does not consider the environmental aspects, thus led to unsafe conditions in underground mining, and waste generated by gold mining has the potential to cause pollution.

This thesis aims to make the design of environmentally friendly processing of gold. Limitation of the problem is the people mining method with simple equipment with amalgamation and cyanidation processing. Research methods include literature studies, field research, data processing, and calculation of water needs to obtain a settling pond design environmentally sustainable.

The results showed the amalgamation of the gold processing methods require as much as 630 liters of water within 5-6 hours. Size settling ponds with Stokes Law approach is 4m long, 2m wide and 1m depth, with an age of 7 days. The results of the methods of amalgamation tailings were processed using cyanidation method, quite profitable. Alternative cyanidation processing method using the results of the processing of amalgamation tailings, attractive for development.

Gold processing that is managed by the mine advised people not using cyanidation methods. Settling pond design in artisanal mining is advisable to increase the pool with rocks giving zeolite and water hyacinth plants to maximize the reduction of heavy metal content before water flowed into the processing stream.