

SARI

Aktivitas penambangan yang terdapat di lokasi penelitian tepatnya di Desa Boto dan sekitarnya, Kabupaten Wonogiri, Provinsi Jawa Tengah termasuk ke dalam penambangan emas skala kecil atau yang biasa disebut dengan *Artisanal and Small Scale Gold Mining* (ASGM). Pertambangan emas skala kecil yang terdapat di daerah ini disebabkan karena kehadiran mineralisasi emas dengan tipe endapan epitermal sulfidasi rendah. Lokasi penambangan berada di bukit dengan elevasi 500m, sedangkan lokasi pengolahan emas berada dekat dengan pemukiman. Berdasarkan kondisi daerah penelitian maka perlu dilakukannya penelitian di daerah ini karena lokasi pengolahan emas berada di sekitar pemukiman dan aliran sungai. Tiga jenis sampel yang diambil di lokasi penelitian yaitu sampel batuan, sampel *tailing* dan sampel sedimen sungai diambil untuk mengetahui kandungan arsenik, merkuri, dan timbal. Pengambilan sampel diambil di sekitar area penambangan dan pengolahan emas. Pengujian kadar arsenik, merkuri, dan timbal dilakukan dengan metode AAS (*Atomic Absorption Spectroscopy*). Kadar arsenik pada sampel mempunyai kandungan sebagai berikut: sampel batuan sebesar 0,00394 ppm; sampel *tailing* memiliki rentang 0,002 ppm-0,005 ppm; dan sampel sedimen sungai dengan rentang 0,00011 ppm-0,00107 ppm. Kadar merkuri pada sampel mempunyai kandungan sebagai berikut: sampel batuan sebesar 0,00489 ppm; sampel *tailing* memiliki rentang 4,228 ppm-6,427 ppm; dan sampel sedimen sungai memiliki rentang 4,379 ppm-5,284 ppm. Kadar timbal pada sampel mempunyai kandungan sebagai berikut: sampel batuan sebesar 8,982 ppm; sampel *tailing* memiliki rentang 7,445 ppm-8,953 ppm; dan sampel sedimen sungai memiliki rentang 7,921 ppm-9,184 ppm. Sumber pencemaran merkuri berasal dari sumber antropogenik yaitu aktivitas penambangan, sedangkan sumber pencemaran arsenik dan timbal berasal dari sumber geogenik atau sumber alami yang diperoleh berdasarkan hasil analisa AAS terhadap sampel batuan.

Kata kunci: Boto, pertambangan emas, pencemaran, arsenik, merkuri, timbal, *tailing*, AAS.

ABSTRACT

The mining activities located in Boto Village and its vicinity, Wonogiri Regency, Central Java Province belongs to small scale gold mining which is usually called as Artisanal and Small Scale Gold Mining (ASGM). Small scale gold mines have been created in this area due to interest in the epithermal low sulphidation gold mineralization present. The elevation of the mines is around 500 m, but the gold processing area is located near the settlements. The research background in this area is based on the condition of the gold processing area near the settlements and small rivers. There are three types of samples, rock sample, tailing samples, and stream sediment samples, were collected in this area to determine the concentration of arsenic, mercury, and lead. The samples were collected in the vicinity of the gold processing area. The analysis of arsenic, mercury, and lead is based on AAS (Atomic Absorption Spectrometry) method. The concentration of arsenic taken from samples as follow: rock sample has a concentration of 0.00394 ppm; tailing samples have a range 0.002 ppm-0.005 ppm; and stream sediment samples have a range 0.00011 ppm-0.00107 ppm. The concentration of mercury taken from samples as follow: rock sample has a concentration of 0.00489 ppm; tailing samples have a range 4.228 ppm-6.427 ppm; and stream sediment samples have a range 4.379 ppm-5.284 ppm. The concentration of lead taken from samples as follow: rock sample has a concentration of 8.982 ppm; tailing samples have a range 7.445 ppm-8.953 ppm; and stream sediment samples have a range 7.921 ppm-9.184 ppm. The highest concentration of arsenic and mercury comes from the tailing samples located near the gold processing area. Mercury contamination is from mining activities (anthropogenic source); however, the sources of arsenic and lead contamination are geogenic based on analysis of rock sample using AAS method.

Key words: *Boto, gold mines, contamination, arsenic, mercury, lead, tailing, AAS.*