

STUDI PENGARUH MAGNETISASI PASIR BESI SEBAGAI MEDIA PENYARING TERHADAP PENURUNAN KADAR POLUTAN LOGAM TIMBAL (Pb)

INTISARI

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Penelitian ini dilakukan untuk mengetahui pengaruh magnetisasi pasir besi sebagai media penyaring pada sistem penyaring elektromagnetik terhadap penurunan kadar polutan logam Timbal (Pb) dalam larutan senyawa $Pb(NO_3)_2$. Penyaringan dilakukan dengan mengalirkan larutan melalui sistem penyaring elektromagnetik. Penyaring elektromagnetik dibuat dari Pipa PVC (Polyvinil Clorida) berdiameter 1 inch yang diberi lilitan kawat berdiameter 0,5 mm sebanyak 800 lilitan, kemudian pada penyaring dimasukkan pasir besi 837 gram sebagai media penyaring. Pada penelitian ini dilakukan 3 variasi, yaitu variasi kuat arus listrik, variasi waktu pengambilan sampel hasil penyaringan dan variasi kadar awal logam Pb dalam larutan. Kandungan akhir logam Pb hasil penyaringan, diuji dengan peralatan Spektrofotometri Serapan Atom (SSA). Hasil penyaringan pada variasi kuat arus listrik menunjukkan kenaikan kuat arus listrik sebanding dengan kenaikan efektifitas penyaring karena pengaruh magnetisasi pasir besi sebagai media penyaring. Hasil yang diperoleh pada variasi waktu pengambilan sampel hasil penyaringan, menunjukkan efektifitas penyaring paling besar pada pengambilan sampel uji yang pertama, kemudian efektifitas cenderung mengalami penurunan pada pengambilan sampel selanjutnya yang disebabkan oleh efek kejenuhan pasir besi sebagai media penyaring. Pada variasi kadar awal logam Pb ditunjukkan untuk penyaringan dengan kadar awal (227 ± 5) ppm pada arus 1A dan 2A, diperoleh efektifitas optimal penyaring sebesar 100%, sementara pada arus 3A, diperoleh efektifitas optimal sebesar 100% untuk penyaringan logam Pb dengan kadar awal (338 ± 3) ppm.

Kata-kata kunci: Sistem penyaring elektromagnetik, magnetisasi pasir besi, efektifitas penyaring

A STUDY OF THE INFLUENCE MAGNETIZATION OF IRON SAND AS A FILTER MEDIA ON THE DECREASE OF THE CONCENTRATE OF LEAD METAL POLUTANT

ABSTRACT

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This study has been conducted to understand the influence magnetization of iron sand as filter media on the electromagnetic filter system toward decreasing lead metal concentrate with in liquid sample $\text{Pb}(\text{NO}_3)_2$. The concentrate of lead metal that is being used are (818 ± 8) ppm, (446 ± 8) ppm, (338 ± 3) ppm and (227 ± 5) ppm. The filtering has been done by flow the liquid through electromagnetic filter system. Electromagnetic filter system was made of PVC (Polyvinyl Chloride) pipe with 1 inch of diameter, that has been coiled wire 0,5 mm of diameter with the amount of coils were 800 then it filled with iron sand 837 gram of weight as a filter media. The final concentrate that was the result of filtering the liquid is being tested by AAS (Atomic Absorption Spectrophotometer). These were 3 variations that were used in this study, the variations were electric current variation, time based sampling variation and concentrate of lead metal variation. The result of study showed that the more electric current make the strength magnetism of iron sand as filter media more powerful, so the effectivity of filter is higher. In the time based sampling variation showed that the best effectivity of filter was in the first time sampling, then the effectivity tends to decrease because the saturation effect of iron sand as a filter media. The filtering of lead metal (227 ± 5) ppm with electric current 1A and 2A, also the filtering (338 ± 3) ppm with electric current 3A, could gained filter effectivity up to 100%.

Keywords: Electromagnetic filter system, iron sand magnetism, filter effectivity