

PENENTUAN KADAR Pb DALAM SAMPEL LIMBAH CAIR LABORATORIUM MENGGUNAKAN SPEKTRIFOTOMETRI VISIBEL DAN SPEKTRIFOTOMETRI SERAPAN ATOM

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ABSTRAK

Limbah cair laboratorium adalah limbah dalam wujud cair yang dihasilkan selama proses aktivitas di laboratorium. Apabila limbah cair langsung dibuang ke badan air akan membahayakan kehidupan dan dapat mencemari lingkungan perairan. Pengujian limbah cair laboratorium bertujuan untuk menganalisis kadar Pb dengan metode Spektrofotometri Visibel dan Spektrofotometri Serapan Atom dan mengetahui metode yang menuju validitas lebih tinggi berdasarkan parameter validasi.

Analisis Pb dengan metode Spektrofotometri Visibel menggunakan pereaksi ditizon yang membentuk kompleks timbal ditizonat menurut APHA 3500-Pb B, 2005 dan dibaca pada panjang gelombang 515 nm, sedangkan metode Spektrofotometri Serapan Atom menurut SNI 6989 8:2009 dan dibaca pada panjang gelombang 283,3 nm. Kemudian hasil analisis keduanya dikomparasi dengan validasi metode.

Hasil penelitian diperoleh kadar Pb pada metode Spektrofotometri Visibel adalah 1,0721 mg/L; 0,8443 mg/L; 1,3806 mg/L; 1,0579 mg/L dan 0,9915 mg/L. Kadar Pb pada metode Spektrofotometri Serapan Atom adalah 0,7079 mg/L; 0,0843 mg/L; 1,1011 mg/L; 0,3708 mg/L dan 0,1292 mg/L dalam 5 hari pengamatan. Metode yang menuju validitas lebih tinggi didapatkan dengan Spektrofotometri Serapan Atom yang memiliki akurasi 95,99%; presisi 1,21%; koefisien korelasi 0,9995 dan selektivitasnya baik sehingga dapat diterima karena tidak ada pengaruh dengan penambahan plasebo.

Kata kunci : Limbah Cair Laboratorium, Pb, Spektrofotometri Visibel, Spektrofotometri Serapan Atom, Validasi Metode

ABSTRACT

(DETERMINATION OF LEAD CONTENT IN LABORATORY WASTEWATER USING VISIBLE SPECTROPHOTOMETRY AND ATOMIC ABSORPTION SPECTROPHOTOMETRY)

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Laboratory wastewater is liquid-form waste which is produced during the activities in the laboratory. It is dangerous for life and also can pollute the aquatic environment if waste being directly discharged into water body. Analysis of laboratory wastewater aimed to analyse of Pb levels by using Visible Spectrophotometry and Atomic Absorption Spectrophotometry and to find out which method leads to higher validity based on validation parameters.

Dithizone reagent was used to analyse of Pb using Visible Spectrophotometry forming Lead (II) dithizone complex according to APHA 3500-Pb B, 2005, and was read at 515 nm wavelength. While harnessing Atomic Absorption Spectrophotometry was based on SNI 6989.8:2009 and was read at 283.3 nm wavelength. Then both results were compared using validation method.

The result showed that Pb contents by Visible Spectrophotometry were 1,0721 mg/L; 0,8443 mg/L; 1,3806 mg/L; 1.0579 mg/L and 0,9915 mg/L, whilst Pb contents using Atomic Absorption Spectrophotometry were 0,7079 mg/L; 0,0843 mg/L; 1,1011 mg/L; 0,3708 mg/L and 0,1292 mg/L in 5 days observation. Method leading to higher validity was obtained by Atomic Absorption Spectrophotometry which had an accuracy of 95.99%; precision by 1.21%; correlation coefficient by 0.9995. It is acceptable because there was no effect within the addition of placebo.

Keyword : Laboratory wastewater, Lead, Visible Spectrophotometry, Atomic Absorption Spectrophotometry, Validation Method.