

**Politeknik Kesehatan Kemenkes Bandung**

**Program Studi Sarjana Terapan Sanitasi Lingkungan**

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**Abstrak**

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**PERBEDAAN VARIASI LAMA WAKTU PENYINARAN SINAR UV  
TERHADAP PENURUNAN BAKTERI *ESCHERICHIA COLI*  
PADA AIR MINUM DI PT. BAKRIE PIPE INDUSTRIES**

vii + 58 Halaman + 15 Tabel + 19 Lampiran

Sumber air minum di PT. Bakrie Pipe Industries bekerja sama dengan pihak ketiga dan ditampung kedalam toren serta tidak terdapat pengolahan air minum, sehingga dapat menjadi penyebab adanya bakteri *Escherichia coli*. Berdasarkan pemeriksaan kondisi awal air minum di PT. Bakrie Pipe Industries menunjukkan bahwa terdapat bakteri *Escherichia coli* sebanyak 17/100ml. Tujuan penelitian ini untuk mengetahui perbedaan variasi waktu kontak sinar *Ultraviolet-C* sebagai desinfeksi terhadap penurunan jumlah bakteri *Escherichia coli* pada air minum di PT. Bakrie Pipe Industries. Jenis penelitian yaitu eksperimen dengan *posttest-with control*. Populasi dari penelitian ini adalah air minum di PT. Bakrie Pipe Industries dan sampel air minum diambil dari kran dispenser Plant Produksi KT-24 sebelum dan sesudah perlakuan. Sampel air minum untuk kontrol diambil sebelum dikontakkan dengan sinar *Ultraviolet-C* sedangkan sampel air minum untuk perlakuan diambil setelah dikontakkan dengan sinar *Ultraviolet-C* waktu kontak 20 menit, 25 menit dan 30 menit. Berdasarkan hasil penelitian, pada waktu kontak 20 menit terdapat bakteri *Escherichia coli* sebanyak 4/100ml dengan rata-rata persentase penurunan 86,84%, waktu kontak 25 menit terdapat bakteri *Escherichia coli* sebanyak 1/100ml dengan rata-rata persentase penurunan 95,61% dan waktu kontak 30 menit terdapat bakteri *Escherichia coli* sebanyak 0/100ml dengan rata-rata persentase penurunan 100%. Waktu kontak sinar *Ultraviolet-C* 30 menit paling efektif dalam menurunkan bakteri *Escherichia coli* dengan rata-rata penurunan 100%. Pengujian data menggunakan uji *Kruskal-Wallis*, hasil menunjukkan *p-value*  $0,000 < 0,05$  menunjukkan bahwa terdapat perbedaan waktu kontak 20 menit, 25 menit dan 30 menit terhadap penurunan bakteri *Escherichia coli* pada air minum. Diharapkan untuk peneliti selanjutnya dapat melakukan pemeriksaan air minum dengan parameter mikrobiologi lainnya.

Daftar Pustaka: : 27 (2000 – 2019)

Kata Kunci : Air Minum, Sinar Ultraviolet-C, *Escherichia coli*, Waktu Kontak

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**Abstract**

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***THE DIFFERENCES OF UV RAY TIME LONG VARIATION AGAINST  
THE DECREASE OF THE ESCHERICHIA COLI BACTERIA IN THE  
DRINKING WATER IN PT. BAKRIE PIPE INDUSTRIES***

*vii + 58 pages + 15 tables + 19 Attachment*

*The source of drinking water at PT. Bakrie Pipe Industries cooperates with third parties and is accommodated into toren and there is no drinking water treatment, so that it can be a cause of Escherichia coli bacteria. The results of the examination of drinking water at PT. Bakrie Pipe Industries shows that there are 17/100ml Escherichia coli bacteria. This research aims to determine the differences in contact time variation of UV-C rays as a disinfection to the decrease in the number of Escherichia coli bacteria in drinking water in PT. Bakrie Pipe Industries. This type of research is an experiment with posttest-with control. The population of this research is drinking water in PT. Bakrie Pipe Industries and drinking water samples were taken from the drinking water dispensers of the Production Plant KT-24 dispensers faucet before and after treatment. Drinking water samples for treatment were taken after contacting with Ultraviolet-C rays contact time 20 minutes, 25 minutes and 30 minutes. Based on the results of the study, at the contact time of 20 minutes there were 4 / 100ml Escherichia coli bacteria with a decreased percentage 86,84% , 25 minute contact time there was 1 / 100ml Escherichia coli with a decreased percentage 95,61% and 30 minute contact time there were Escherichia coli bacteria as much as 0 / 100ml with percentage decrease 100%. The contact time of Ultraviolet-C 30 minutes is most effective in reducing Escherichia coli bacteria with an average reduction of 100%. Testing data using the Kruskal-Wallis test, the results showed a p-value of 0,000 <0.05 showed that there were differences in contact time of 20 minutes, 25 minutes and 30 minutes on the decrease in Escherichia coli bacteria in drinking water. It is hoped that further researchers will be able to conduct drinking water checks with other microbiological parameters.*

*References : 27 (2000 – 2019)*

*Key words : Drinking Water, Ultraviolet-C Ray, Escherichia coli, Contact Time*