

## INTISARI

HAFISH RIZTOHA, 2017, *Evaluasi Pengoperasian dan Pemeliharaan Instalasi Pengolahan Air Limbah RSUP Dr. Sardjito*. (dibimbing oleh Dr. Ir. Sindu Nuranto, MS)

Saat ini RSUP Dr. Sardjito mengolah limbah cair secara biologis yaitu pengolahan air limbah untuk mengurangi zat-zat organik yang terdapat dalam limbah cair itu sendiri. Pengolahan seperti ini biasa kita kenal dengan proses lumpur aktif (*sludge activated*). Kapasitas Instalasi Pengolahan Air Limbah pada RSUP Dr. Sardjito sebesar 600 m<sup>3</sup>, limbah yang dihasilkan RSUP Dr. Sardjito berkisar antara 600-800 m<sup>3</sup> per hari. Tujuan dari penelitian ini adalah untuk mengetahui karakteristik limbah cair dan efisiensi total limbah cair, mengetahui waktu tinggal limbah cair dalam unit Equalisasi, unit Aerasi, unit Sedimentasi serta menentukan volume unit untuk menampung besarnya debit limbah cair yang masuk, mengetahui biaya operasional dalam mengolah limbah cair dan perawatan yang dilakukan, rekomendasi pemanfaatan limbah cair dan penggunaan air bersih sebagai penunjang Green Hospital.

Proses analisis dilakukan dengan pengambilan sampel air limbah pada inlet dan outlet Instalasi Pengolahan Air Limbah, pengambilan sampel inlet unit aerasi, outlet aerasi, inlet sedimentasi dan outlet sedimentasi kemudian dilanjutkan dengan pengujian laboratorium, pengukuran debit air limbah, pengukuran dimensi Instalasi Pengolahan Air Limbah, setelah mendapat data tersebut dilakukan perhitungan waktu tinggal, besar debit air limbah, analisa pengujian laboratorium, yang diakhiri perhitungan efisiensi, biaya oprasional, perawatan Instalasi Pengolahan Air Limbah dan pemisahan limbah cair.

Hasil analisis diketahui bahwa hasil pengujian laboratorium menunjukkan parameter limbah cair RSUP Dr. Sadjito sudah sesuai dengan baku mutu PERDA DIY No. 7 Tahun 2016 Tentang Baku Mutu Limbah Cair. Debit limbah cair yang masuk sebesar 573,20 m<sup>3</sup> per hari sedangkan untuk kapasitas Instalasi Pengolahan Air Limbah sebesar 600 m<sup>3</sup> bisa dikatakan Instalasi Pengolahan Air Limbah sudah tidak memenuhi sedangkan untuk waktu tinggal unit aerasi dan unit sedimentasi belum memenuhi. Efisiensi penurunan parameter BOD sebesar 93,5% dan TSS sebesar 80% menurut teori pengolahan air limbah dengan sistem lumpur aktif sudah tercapai dan bisa dikatakan baik. Biaya operasional limbah cair sebesar Rp 1.663.796/hari. Pemeliharaan Instalasi Pengolahan Limbah Cair RSUP Dr. Sardjito bisa dikatakan baik pemeliharaan dilakukan setiap hari, namun untuk pemeliharaan mesin pompa dan *filter press* belum bisa dikatakan baik dikarenakan pemeliharaan rutin belum dilaksanakan dengan baik. Pemisahan limbah B3 dan non B3 dapat mengurangi 352.050 l limbah cair dan mengurangi 70.410 ml/l lumpur aktif.

**Kata Kunci:** Limbah cair, debit air limbah, waktu tinggal, karakteristik limbah cair, efisiensi penurunan, pemeliharaan.

## ABSTRACT

HAFISH RIZTOHA, 2017, *Evaluation Operation and Maintenance Waste Water Treatment RSUP Dr. Sardjito*. (Supervised by Dr. Ir. Sindu Nuranto, MS)

Now days, RSUP Dr Sardjito applies the waste water treatment biologically for reduce organic substances who be found inside the waste water. Processing the waste water is familiar as sludge activated. The liquid waste capacity of RSUP Dr Sardjito is 600 m<sup>3</sup> while the waste generated RSUP Dr Sardjito range from 600-800 m<sup>3</sup> each day. The purpose of this research is to know the characteristics of the waste water treatment and total efficiency of the processing of the waste water, the residence time in equalitation tank, aeration tank, sedimentation tank and determine the unit volume to accommodate of discharge of incoming waste water, the operational cost and the treatment of the waste water treatment plant and Recommendation for the utilization of wate water as support of green hospital.

The process of analysis is carried out from sampling of waste water at inlet and outlet of Waste Water Treatment Plant, sampling of inlet of aeration unit, aeration outlet, sedimentation inlet and sedimentation outlet then followed by laboratory testing then continued measurement of waste water discharge, dimension measurement of Waste Water Treatment Plant, after obtaining the data is calculated residence time, large waste water discharge, laboratory testing analysis, which ended the calculation of efficiency, operational costs and treatment Waste Water Treatment Plant.

The results of the analysis showed that the results of laboratory tests showed the liquid waste of Dr. Sadjito is in accordance with the standard of PERDA DIY no. 7 of 2016 on the Standard of Liquid Waste. Incoming liquid waste discharge amounted to 573.20 m<sup>3</sup> each day while for Waste Water Treatment Plant capacity of 600 m<sup>3</sup>. It has meaning that waste Water Treatment Plant has not fulfilled while for residence of aeration unit and sedimentation unit has not meet the standard. Analysis on aeration unit of BOD decrease 77% and COD 80%, BOD decrease unoptimal due to insufficient residence time but efficiency of BOD parameter decrease 93,5% and TSS 80% according to theory of wastewater treatment with sludge activated system is definitely good. Operational cost of liquid waste is Rp. 1.663.796.4 each day. Maintenance of Liquid Waste Processing Installation of Dr. Sardjito good maintenance is done every day, but the maintenance of pump and filter press machine is unoptimal because routine maintenance has not executed properly. Waste separation of B3 and non B3 can reduce 352.050 l waste water and reduce 70.410 ml/l slude actived.

**Keyword:** waste water, discharge of the waste water, residence time, characteristics of the waste water, efficiency of the processing, treatment.