

# Pengaruh sistem pengolahan air limbah domestik dan limbah industri skala kecil terhadap kualitas air sungai Ciliwung Wilayah Jakarta sebagai arahan pengendalian pencemaran di Teluk Jakarta = The effect of domestic waste water treatment system and small scale industrial waste water to water quality of Ciliwung river in Jakarta areas as a pollution control in Jakarta bay

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## Abstrak

Degradasi DAS Ciliwung yang terus berlanjut, berakibat pada tidak dapat digunakannya sungai Ciliwung sesuai peruntukkannya. Buruknya sistem pengolahan air limbah domestik dan industri kecil yang membuang limbahnya langsung ke Sungai Ciliwung, berperan dalam memperburuk kualitas air sungai. Identifikasi dan penentuan faktor-faktor yang berpengaruh terhadap kualitas air sungai Ciliwung DKI Jakarta, perlu dilakukan agar diperoleh arahan strategi untuk mengatasi permasalahan tersebut.

Metode penelitian dilakukan dengan menentukan status mutu air berdasarkan Metode STORET dan Indeks Pencemar, kemudian untuk mengetahui faktor yang berpengaruh terhadap kualitas air sungai digunakan metode SPSS versi 17. Dari hasil penelitian diketahui bahwa kondisi pencemaran Sungai Ciliwung DKI Jakarta tergolong dalam kategori cemar sedang hingga berat berdasarkan metode Indeks Pencemar, sedangkan melalui metode STORET dapat diketahui bahwa kondisi status mutu air berada dalam kategori buruk.

Berdasarkan hasil pengolahan SPSS dengan tingkat kepercayaan 95%, dari limbah domestik diperoleh persamaan  $Y = 0,496 + 0,129 X_1 + 0,030 X_2 + 0,021 X_3 + 0,175 X_4 + 0,129 X_5 + (-0,081) X_6 + 0,013 X_7$ , yang menunjukkan bahwa faktor yang berpengaruh terhadap kualitas air Sungai Ciliwung adalah tipe jamban (90.9% jamban leher angsa), kualitas limbah cair dan kapasitas rumah tangga/masyarakat dalam membayar layanan fasilitas pengolahan limbah domestik. Sedangkan pada limbah industri diperoleh persamaan  $Y = 2,779 + (-0,046) X_1 + (-0,528) X_2 + (-0,132) X_3 + 0,098 X_4 + 0,418 X_5 + (-0,695) X_6$ , yang menunjukkan bahwa faktor yang berpengaruh adalah pembuangan limbah (90% langsung dibuang ke badan air), kapasitas industri dalam membayar layanan fasilitas pengolahan limbah dan peran kelembagaan masyarakat.

Melalui analisis SWOT dapat diketahui bahwa permasalahan pengendalian pencemaran Sungai Ciliwung berada dalam kuadran IV (Weakness-Threat) sehingga strategi yang diusulkan adalah pendataan ulang industri kecil di bantaran sungai, penyuluhan dan penertiban buangan limbah domestik dan limbah industri, serta penerapan rancangan pola pengelolaan sumber daya air.

Ciliwung watershed degradation continues, resulting in the inability to use the Ciliwung river according to its function. Poor domestic wastewater treatment systems and small industries that dump their waste directly into the Ciliwung River, take a role in exacerbating the water quality of the river.

Identification and determination of factors that affect the water quality of the river Ciliwung Jakarta, needs to be done in order to obtain referrals strategies to overcome these problems.

The method of research is done by determining the water quality status based on STORET method and Pollutant Index, and then to determine the factors that affect the quality of the river water used method of SPSS version 17. Based on survey, revealed that the condition of Jakarta Ciliwung River pollution classified

in the category of moderate to severe blackened by Pollutant Index method, while through STORET method can be seen that the condition of the water quality status are in a bad category.

Based on the results of SPSS processing with 95% of confidence level, from domestic waste derived equation  $Y = 0,496 + 0,129 X_1 + 0,030 X_2 + 0,021 X_3 + 0,175 X_4 + 0,129 X_5 + (-0,081) X_6 + 0,013 X_7$ , which suggests that the factors that affect the water quality of the Ciliwung river is the type of latrine (90.9% latrines goose neck), effluent quality and capability of households / communities for pay service domestic wastewater treatment facility. While the industrial waste derived equation  $Y = 2,779 + (-0,046) X_1 + (-0,528) X_2 + (-0,132) X_3 + 0,098 X_4 + 0,418 X_5 + (-0,695) X_6$ , which suggests that the factors that influence the disposal of waste (90% directly discharged into a body of water), the capability to pay the service industry in waste treatment facilities and the role of community institutions.

Through the SWOT analysis, can be seen that the problem of pollution control Ciliwung River is in quadrant IV (Weakness-Threat) so that the proposed strategy is the data collection of small industries along the river, counseling and enforcement of domestic sewage and industrial waste, as well as the application of design patterns for resource management water.