DAFTAR PUSTAKA

Ahammad, S. Z., Graham, D. W., & Dolfing, J. (2020). *Wastewater Treatment: Biological* (2nd Edition). CRCPress. https://www.taylorfrancis.com/chapters/edit/10.1201/9781003045045-61/wastewater-treatment-biological-shaikh-ziauddin-ahammad-david-graham-jan-dolfing

Al-Amshawee, S., & Yunus, M. Y. B. M. (2021). Geometry of biofilm carriers: A systematic review deciding the best shape and pore size. In *Groundwater for Sustainable Development* (Vol. 12). Elsevier B.V. https://doi.org/10.1016/j.gsd.2020.100520

Al-Amshawee, S., Yunus, M. Y. B. M., Vo, D.-V. N., & Tran, N. H. (2020). Biocarriers for biofilm immobilization in wastewater treatments: a review. *Environmental Chemistry Letters*, *18*(6), 1925–1945. https://doi.org/10.1007/s10311-020-01049-y

Alzate Marin, J. C., Caravelli, A. H., & Zaritzky, N. E. (2016). Nitrification and aerobic denitrification in anoxic-aerobic sequencing batch reactor. *Bioresource Technology*, *200*, 380–387. https://doi.org/10.1016/j.biortech.2015.10.024

Aniyikaiye, T. E., Oluseyi, T., Odiyo, J. O., & Edokpayi, J. N. (2019). Physico-chemical analysis of wastewater discharge from selected paint industries in Lagos, Nigeria. *International Journal of Environmental Research and Public Health*, *16*(7). https://doi.org/10.3390/ijerph16071235

Anna J, A. S. (2018). Review of Modern Technologies in Biological Wastewater Treatment. *International Journal of Science and Research*. https://doi.org/10.21275/SR20215222133

Arohmah, N. E., & Rachmanto, T. A. (2023). Penurunan Konsentrasi COD Limbah Cair Industri Batik Jetis Pada Proses Aklimatisasi Menggunakan Mikroorganisme Bacillus Sp. *Envirous*, *3*(2). https://doi.org/10.33005/envirous.v3i2.20

Aziz, A., Basheer, F., Sengar, A., Irfanullah, Khan, S. U., & Farooqi, I. H. (2019). Biological wastewater treatment (anaerobic-aerobic) technologies for safe discharge of treated slaughterhouse and meat processing wastewater. In *Science of the Total Environment* (Vol. 686, pp. 681–708). Elsevier B.V. https://doi.org/10.1016/j.scitotenv.2019.05.295

Barker, B., Smith, R., Vandommelen, J., & Thompson, S. (2020). *Biological Nutrient Removal: Tools, Tips and Lessons Learned*.

Biotornado. (2024). *Domestic Wastewater Treatment Process*. Biotornado.Com. https://biotornado.com/domestic-wastewater-treatment-process/

Budiasti, H., Anasstasia, T. T., Utami, A., Kristanto, W. A. D., & Widiarti, I. W. (2024). Status Mutu Air Sungai Bedog Akibat Efluen Air Limbah Domestik dari Instalasi Pengolahan Air Limbah (IPAL) Komunal. *Prosiding Seminar*

Nasional Teknik Lingkungan Kebumian SATU BUMI, *5*(1). https://doi.org/10.31315/psb.v5i1.11632

Budiwanto, S. (2017). *Metode Statistika untuk Mengolah Data Keolahragaan*.

Chatzi, A., & Doody, O. (2023). The one-way ANOVA test explained. *Nurse Researcher*, *31*(3), 8–14. https://doi.org/10.7748/nr.2023.e1885

Chen, J. (2023). *Test of Homogeneity* (pp. 161–178). https://doi.org/10.1007/978-981-99-6141-2_9

Chuang, L. (2021, February 17). *Kaldnes Media*. https://www.chemicalpackings.com/product/kaldnes-media.html

Djuwita, M. R., Hartono, D. M., Mursidik, S. S., & Soesilo, T. E. B. (2021). Pollution load allocation on water pollution control in the citarum river. *Journal of Engineering and Technological Sciences*, *53*(1), 1–15. https://doi.org/10.5614/j.eng.technol.sci.2021.53.1.12

Dorji, U., Dorji, P., Hokyong, S., & Badeti, U. (2022). *On-site domestic wastewater treatment system using shredded waste plastic bottles as biofilter media Pilot-scale study on effluent standards in Bhutan*.

Dorji, U., Tenzin, U., Dorji, P., Pathak, N., Johir, M. A. H., Volpin, F., Dorji, C., Chernicharo, C. A. L., Tijing, L., Shon, H., & Phuntsho, S. (2021). Exploring shredded waste PET bottles as a biofilter media for improved on-site sanitation. *Process Safety and Environmental Protection*, *148*, 370–381. https://doi.org/10.1016/j.psep.2020.09.066

Etesami, H., Jeong, B. R., & Glick, B. R. (2023). Biocontrol of plant diseases by Bacillus spp. *Physiological and Molecular Plant Pathology*, *126*, 102048. https://doi.org/10.1016/j.pmpp.2023.102048

Fauzi, M., Soewondo, P., Handajani, M., Tedjakusuma, T., & Nur, A. (2025). Effect of polymer variation as carrier media for microorganism growth in biofilm development using aerobic fixed-biofilm reactor system. *Results in Engineering*, *25*. https://doi.org/10.1016/j.rineng.2025.104038

Fauzi, M., Soewondo, P., & Nur, A. (2023). Treatment of Domestic Wastewater on Fixed-Bed Reactor Using Plastic Supporting Media–A Review. *Ecological Engineering and Environmental Technology*, *24*(6), 276–281. https://doi.org/10.12912/27197050/169240

Fauzi, M., Soewondo, P., Nur, A., Handajani, M., Tedjakusuma, T., Oginawati, K., & Setiyawan, A. S. (2023). Performances of Polyethylene Terephthalate Plastic Bottles Waste as Supporting Media in Domestic Wastewater Treatment Using Aerobic Fixed-Film System. *Journal of Ecological Engineering*, *24*(10), 30–39. https://doi.org/10.12911/22998993/169963

Federation, W. E. (2017). *Liquid Stream Fundamentals: Sedimentation*.

Frankel, T. (2020, December). *Anoxic vs. Anaerobic vs. Aerobic Wastewater Treatment*. https://www.ssiaeration.com/anoxic-vs-anaerobic-vs-aerobic-wastewater-treatment/

Gaddis, G. M., & Gaddis, M. L. (1990). Introduction to biostatistics: Part 2,

descriptive statistics. *Annals of Emergency Medicine*, *19*(3), 309–315. https://doi.org/10.1016/S0196-0644(05)82052-9

Garcha, S., Verma, N., & Brar, S. K. (2016). Isolation, characterization and identification of microorganisms from unorganized dairy sector wastewater and sludge samples and evaluation of their biodegradability. *Water Resources and Industry*, *16*, 19–28. https://doi.org/10.1016/j.wri.2016.10.002

Goswami, S., & Mazumder, D. (2016). Comparative study between activated sludge process (ASP) and moving bed bioreactor (MBBR) for treating composite chrome tannery wastewater. *Materials Today: Proceedings*, *3*(10), 3337–3342. https://doi.org/10.1016/j.matpr.2016.10.015

Green, J. L., Manski, S. E., Hansen, T. A., & Broatch, J. E. (2023). Descriptive statistics. In *International Encyclopedia of Education(Fourth Edition)* (pp. 723–733). Elsevier. https://doi.org/10.1016/B978-0-12-818630-5.10083-1

Harinaldi. (2005). *Prinsip-Prinsip Statistik Untuk Teknik dan Sains* (S. Lemarmata, Ed.). Erlangga. https://books.google.com.my/books?id=VqWqp4__ys8C&printsec=frontcover&hl=id&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

Hariyani, N., & Sarto, S. (2018). *Evaluasi penggunaan biofi lter anaerob-aerob untuk meningkatkan kualitas air limbah rumah sakit*. *34*, 199–204.

He, S., Jia, M., Xiang, Y., Song, B., Xiong, W., Cao, J., Peng, H., Yang, Y., Wang, W., Yang, Z., & Zeng, G. (2022). Biofilm on microplastics in aqueous environment: Physicochemical properties and environmental implications. *Journal of Hazardous Materials*, *424*. https://doi.org/10.1016/j.jhazmat.2021.127286

Hussein, Z. M., Abedali, A. H., & Ahmead, A. S. (2019). Improvement Properties of Self-Healing Concrete by Using Bacteria. *IOP Conference Series: Materials Science and Engineering*, *584*(1). https://doi.org/10.1088/1757-899X/584/1/012034

Iradati, L., Samudro, G., Sumiyati, S., Studi Teknik Lingkungan Undip, P., Sudarto, J. H., & Tembalang -Semarang, S. (2022). *Pengaruh Konsentrasi Chemical Oxygen Demand (COD) dan Ragi Terhadap Kinerja Dual Chamber Microbial Fuel Cells (DC-MFCs)*. www.bath.ac.uk

Iyo, T., Yoshino, T., Tadokoro, M., Ogawa, T., & Ohno, S. (1996). Advanced performance of small-scale domestic sewage treatment plants using anaerobic-aerobic filter systems with flow-equalization and recirculation. *Environmental Technology (United Kingdom)*, *17*(11), 1235–1243. https://doi.org/10.1080/09593331708616493

Jabnabillah, F., & Margina, N. (2022). Analisis Korelasi Pearson Dalam Menentukan Hubungan Antara Motivasi Belajar Dengan Kemandirian Belajar Pada Pembelajaran Daring. In *Jurnal Sintak* (Vol. 1, Issue 1). https://doi.org/

Kavousi, R., & Borghei, S. M. (2023). An Application of Anaerobic-Aerobic Combined Bioreactor Efficiency in COD Removal. *Geomatics and Environmental Engineering*, *17*(4), 5–18. https://doi.org/10.7494/geom.2023.17.4.5

Kementerian Lingungan Hidup dan Kehutanan Republik Indonesia. (2016). *PermenLHK Nomor 68 tentang Baku Mutu Air Limbah Domestik*.

Koul, B., Yadav, D., Singh, S., Kumar, M., & Song, M. (2022). Insights into the Domestic Wastewater Treatment (DWWT) Regimes: A Review. In *Water (Switzerland)* (Vol. 14, Issue 21). MDPI. https://doi.org/10.3390/w14213542

Kristanti, R. A., Bunrith, S., Kumar, R., & Mohamed, A. O. (2023). Municipal Wastewater Treatment Technologies in Malaysia: A Short Review. *Industrial and Domestic Waste Management*, *3*(1), 38–46. https://doi.org/10.53623/idwm.v3i1.243

Kumar, V., Sehgal, R., & Gupta, R. (2023). Microbes and wastewater treatment. In *Development in Wastewater Treatment Research and Processes* (pp. 239–255). Elsevier. https://doi.org/10.1016/B978-0-323-88505-8.00010-3

Lago, A., Rocha, V., Barros, O., Silva, B., & Tavares, T. (2024). Bacterial biofilm attachment to sustainable carriers as a clean-up strategy for wastewater treatment: A review. *Journal of Water Process Engineering*, *63*, 105368. https://doi.org/10.1016/j.jwpe.2024.105368

Li, W., Gupta, R., Zhang, Z., Cao, L., Li, Y., Show, P. L., Gupta, V. K., Kumar, S., Lin, K. Y. A., Varjani, S., Connelly, S., & You, S. (2023). A review of high-solid anaerobic digestion (HSAD): From transport phenomena to process design. In *Renewable and Sustainable Energy Reviews* (Vol. 180). Elsevier Ltd. https://doi.org/10.1016/j.rser.2023.113305

Li, W., Jia, M. X., Deng, J., Wang, J. H., Lin, Q. L., Liu, C., Wang, S. S., Tang, J. X., Zeng, X. X., Ma, L., Su, W., Liu, X. Y., Cai, F., & Zhou, L. Y. (2018). Isolation, genetic identification and degradation characteristics of COD-degrading bacterial strain in slaughter wastewater. *Saudi Journal of Biological Sciences*, *25*(8), 1800–1805. https://doi.org/10.1016/j.sjbs.2018.08.022

Mahendra, S., & Wirawan, S. (2020). Community Preparation for Domestic Wastewater Management Development in Jakarta. In *International Journal of Innovative Science and Research Technology* (Vol. 5, Issue 2). www.ijisrt.com

Mangarengi, N. A. P., Abdullah, N. O., & Alam, S. (2023). The Use of Polymeric Materials of Polyethylene Terephthalate (PET) and Polypropylene (PP) as the media of Anaerobic-aerobic bioreactors in treating wastewater from the tofu industry. *IOP Conference Series: Earth and Environmental Science*, *1268*(1). https://doi.org/10.1088/1755-1315/1268/1/012007

Mishra, P., Pandey, C. M., Singh, U., Gupta, A., Sahu, C., & Keshri, A. (2019).

Descriptive statistics and normality tests for statistical data. *Annals of Cardiac Anaesthesia*, *22*(1), 67–72. https://doi.org/10.4103/aca.ACA_157_18

Mishra, S., Singh, V., Ormeci, B., Hussain, A., Cheng, L., & Venkiteshwaran, K. (2023). Anaerobic–aerobic treatment of wastewater and leachate: A review of process integration, system design, performance and associated energy revenue. In *Journal of Environmental Management* (Vol. 327). Academic Press. https://doi.org/10.1016/j.jenvman.2022.116898

Murshid, S., Antonysamy, A. J., Dhakshinamoorthy, G. P., Jayaseelan, A., & Pugazhendhi, A. (2023). A review on biofilm-based reactors for wastewater treatment: Recent advancements in biofilm carriers, kinetics, reactors, economics, and future perspectives. In *Science of the Total Environment* (Vol. 892). Elsevier B.V. https://doi.org/10.1016/j.scitotenv.2023.164796

Musa, M. A., & Idrus, S. (2020). Effect of Hydraulic Retention Time on the Treatment of Real Cattle Slaughterhouse Wastewater and Biogas Production from HUASB Reactor. *Water*, *12*(2), 490. https://doi.org/10.3390/w12020490

Mustofa, N., & Febriyana, L. (2024). Analisis Kadar Chemical Oxygen Demand (Cod) pada Air Limbah Domestik dengan Metode Refluks menggunakan Spektrofotometer Uv-Vis. *JRSKT - Jurnal Riset Sains Dan Kimia Terapan*, *10*(1), 139–146. https://doi.org/10.21009/jrskt.101.06

Nugroho, M. L., Syafri, J., Ahmad, M., & Marbelia, L. (2023). *Kajian Tingkat Pencemaran pada Efluen Air Limbah IPAL – IPAL DOMESTIK Komunal Ditinjau dari Parameter COD, BOD, Amonia dan Total Coliform di Sleman, Yogyakarta*.

Nur, A., & Komala, P. S. (2021). Plastic bottles waste as attached growth media in the removal of organic and nutrients for small-scale wastewater treatment. *IOP Conference Series: Materials Science and Engineering*, *1098*(5), 052045. https://doi.org/10.1088/1757-899x/1098/5/052045

Nuryadi, Astuti, T. D., Utami, S. E., & Budiantara, M. (2017). *Dasar-Dasar Statistik Penelitian* (1st ed.). SIBUKU MEDIA. www.sibuku.com

Prayatni, S., & Nur, A. (2021). *Keberadaan Mikroplastik di Intalasi Pengolahan Air Limbah Permukiman (Studi Kasus Kota Bandung)*. https://www.researchgate.net/publication/372403699

Purnaningtias, A., Erlan Afiuddin, A., Utami Dewi, T., Studi Teknik Pengolahan Limbah, P., Teknik Permesinan Kapal, J., & Perkapalan Negeri Surabaya, P. (2018). *Pemanfaatan botol plastik bekas sebagai biofilter aerobic dalam penurunan COD, BOD pada air limbah laboratorium kesehatan. Conference Proceeding on Waste Treatment Technology*.

Rahadi, B., Wirosoedarmo, R., & Harera, A. (2018). Sistem Anaerobik-Aerobik pada Pengolahan Limbah Industri Tahu untuk Menurunkan Kadar BOD5, COD, dan TSS. *Jurnal Sumberdaya Alam Dan Lingkungan*, *5*(1), 17–26.

https://doi.org/10.21776/ub.jsal.2018.005.01.3

Rout, P. R., Shahid, M. K., Dash, R. R., Bhunia, P., Liu, D., Varjani, S., Zhang, T. C., & Surampalli, R. Y. (2021). Nutrient removal from domestic wastewater: A comprehensive review on conventional and advanced technologies. *Journal of Environmental Management*, *296*. https://doi.org/10.1016/j.jenvman.2021.113246

Sachan, R. S. K., Kumar, A., Karnwal, A., Paramasivam, P., Agrawal, A., & Ayanie, A. G. (2025). Screening and characterization of PHA producing bacteria from sewage water identifying Bacillus paranthracis RSKS-3 for bioplastic production. *BMC Microbiology*, *25*(1). https://doi.org/10.1186/s12866-025-03841-8

Said, N. I., Hernaningsih, T., Widayat, W., Yudo, S., Septian, A., Setiyono, Rifai, A., Setiadi, I., Sulaeman, O., Wahyono, H. D., Hartaja, D. R. K., Darmawangsa, M. R., & Ikhsan, I. N. (2024). Domestic wastewater treatment with anaerobic-aerobic biofilters using plastic honeycomb media. *IOP Conference Series: Earth and Environmental Science*, *1388*(1). https://doi.org/10.1088/1755-1315/1388/1/012058

Sarkar, M., Chakraborty, S., Kundu, D., Ghosh, S., Khan, A., Karmakar, D., Ali, S., & Mandal, S. (2019). Isolation and Characterization of Bacteria from Sewage and Pond Water, Malda, India. *Acta Scientific Microbiology*, *2*(9), 28–34. https://doi.org/10.31080/asmi.2019.02.0394

Sasse, L. (1998). *Decentralised Wastewater Treatment in Developing Countries DEWATS*.

Schlegel, S., & Koeser, H. (2007). Wastewater treatment with submerged fixed bed biofilm reactor systems – design rules, operating experiences and ongoing developments. In *Water Science and Technology* (Vol. 55, Issues 8–9). https://doi.org/10.2166/wst.2007.245

Setiyawan, A. S., Nur, A., Fauzi, M., Oginawati, K., & Soewondo, P. (2023). Effects of Different Polymeric Materials on the Bacterial Attachment and Biofilm Formation in Anoxic Fixed-Bed Biofilm Reactors. *Water, Air, and Soil Pollution*, *234*(3). https://doi.org/10.1007/s11270-023-06174-2

Sholichin, M. (2012). *Pengelolaan Limbah Cair Proses Biofilm Tercelup (Submerged Biofilter)*.

Singh, D., Singh, D., Mishra, V., Kushwaha, J., Sengar, M., Sinha, S., Singh, S., & Giri, B. S. (2024). Strategies for biological treatment of waste water: A critical review. *Journal of Cleaner Production*, *454*. https://doi.org/10.1016/j.jclepro.2024.142266

Spietz, R. L., Williams, C. M., Rocap, G., & Horner-Devine, M. C. (2015). A dissolved oxygen threshold for shifts in bacterial community structure in a seasonally hypoxic estuary. *PLoS ONE*, *10*(8). https://doi.org/10.1371/journal.pone.0135731

Stoll, A. (2017). Post Hoc Tests: Duncan Multiple Range Test. In *The SAGE*

Encyclopedia of Communication Research Methods. SAGE Publications, Inc. https://doi.org/10.4135/9781483381411.n448

Sumiyati, S., Purwanto, P., & Sudarno, S. (2018). Decreasing of BOD Concentration on Artificial Domestic Wastewater Using Anaerob Biofilter Reactor Technology. *E3S Web of Conferences*, *31*. https://doi.org/10.1051/e3sconf/20183103016

Sumiyati, S., Sutrisno, E., & Wicaksono, F. (2023). *Pengolahan Air Limbah Domestik dengan Teknologi Hybrid Bioreaktor Biofilm-Fitoremediasi*. *21*, 403–407. https://doi.org/10.14710/jil.21.2.403-407

Sururi, M. R., Dirgawati, M., Wiliana, W., Fadlurrohman, F., Hardika, & Widiyati, N. (2023). Performance evaluation of domestic waste water treatment system in urban Indonesia. *Case Studies in Chemical and Environmental Engineering*, *8*. https://doi.org/10.1016/j.cscee.2023.100507

Syafrudin, Sudarno, Anif Rizqianti, & Mochamad Arief Budihardjo. (2015). *The Effect of Uplow Velocity and Influent Concentration to COD Removal on UASB Reactor Treating Domestic Wastewater*. *10*(14). www.arpnjournals.com

Tahir, U., Yasar, A., & Nadeem, M. M. (2018). Performance evaluation of moving-bed biofilm reactor and dissolved air flotation for the treatment of textile wastewater. *Desalination and Water Treatment*, *136*, 131–137. https://doi.org/10.5004/dwt.2018.23226

Tchobonoglous, G., Stensel H. David, Tsucihashi, R., & Burton, F. (2014). *Wastewater Engineering Treatment and Resource Recovery*.

Ullah, Z., & Zeshan, S. (2020). Effect of substrate type and concentration on the performance of a double chamber microbial fuel cell. *Water Science and Technology*, *81*(7), 1336–1344. https://doi.org/10.2166/wst.2019.387

University, K. S. (2024). *SPSS Tutorials: Pearson Correlation*. https://libguides.library.kent.edu/spss/pearsoncorr

Va, V., Soleh Setiyawan, A., Soewondo, P., & Wulandari Putri, D. (2018). *The Characteristics of Domestic Wastewater from Office Buildings in Bandung, West Java, Indonesia* (Vol. 1, Issue 2).

Verma, N., & Singh, A. K. (2013). Development of Biological Oxygen Demand Biosensor for Monitoring the Fermentation Industry Effluent. *ISRN Biotechnology*, *2013*, 1–6. https://doi.org/10.5402/2013/236062

Wang, K., Zhou, C., Zhou, H., Jiang, M., Chen, G., Wang, C., Zhang, Z., Zhao, X., Jiang, L. M., & Zhou, Z. (2023). Comparison on biological nutrient removal and microbial community between full-scale anaerobic/anoxic/aerobic process and its upgrading processes. *Bioresource Technology*, *374*. https://doi.org/10.1016/j.biortech.2023.128757

Widyarani, Wulan, D. R., Hamidah, U., Komarulzaman, A., Rosmalina, R. T., & Sintawardani, N. (2022). Domestic wastewater in Indonesia: generation, characteristics and treatment. In *Environmental Science and Pollution*

Research (Vol. 29, Issue 22, pp. 32397–32414). Springer Science and Business Media Deutschland GmbH. https://doi.org/10.1007/s11356-022-19057-6

Wooditch, A., Johnson, N. J., Solymosi, R., Medina Ariza, J., & Langton, S. (2021). Analysis of Variance (ANOVA). In *A Beginner's Guide to Statistics for Criminology and Criminal Justice Using R* (pp. 183–208). Springer International Publishing. https://doi.org/10.1007/978-3-030-50625-4_12

Xu, J., Ju, H., He, J., & Pang, H. (2022). The Performance of Aerobic Granular Sludge Under Different Aeration Strategies at Low Temperature. *Water, Air, & Soil Pollution*, *233*(2), 43. https://doi.org/10.1007/s11270-022-05506-y

Zhang, H., Xing, F., Duan, L., Gao, Q., Li, S., & Zhao, Y. (2025). Effect of substrate concentration on sulfamethoxazole wastewater treatment by osmotic microbial fuel cell: Insight into operational efficiency, dynamic changes of membrane fouling and microbial response. *Bioresource Technology*, *417*. https://doi.org/10.1016/j.biortech.2024.131805