

3rd International Conference on

PHYSICS, CHEMISTRY AND BIOLOGY

Souvenir

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With this aim, to keep contributing to learning and motivation International research and development Center for publication is going to organize a two-day International Conference with the title “**International Conference on Physics, Chemistry and Biology (PCB-2021)**” on Apr 23-24, 2021 through online mode. We hope, this online mode of the conference in COVID-19 pandemic will be an appreciable step in promoting the research activities and new information between researchers, developers, students, academicians and practitioners working in and around the world by keeping the social distance in view to stop the spread of COVID-19 disease. This conference aims is to present the current researches being carried out in the field of social science and education development around the globe.

Prospective authors from academia as well as industry are invited to submit their abstracts that illustrate original/unpublished works and industrial applications describing advances and significant innovations in the field.

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Message

I am extremely pleased to share that International Research and Development Center for Publication (IRDCP) is organizing a two days **International Conference on Physics, Chemistry and Biology (PCB-2021)** on Apr 23-24, 2021.

I am sure the state of art lectures from the invited experts and the research findings of researchers, academicians, utility engineers will enrich the knowledge of all the participants. It will provide an excellent opportunity for students to learn new ideas.

I offer my best wishes to the whole team of the organizing committee, the participants, and volunteers for the grand success of the conference.

Dr. Kiran
Convenor PCB-2021

Message

I am happy to know that International Research and Development Center for Publication (IRDCP) is organizing a two days **International Conference on Physics, Chemistry and Biology (PCB-2021)** on Apr 23-24, 2021. I am sure that, this conference would provide an ideal platform for the academicians, scholars and experts to present and exchange their research findings and Ideas.

I wish the conference a great success.

Prof. (Dr.) Hamid Saremi
President (Chancellor)
Assrar Higher Institute of Education (Deemed to be University)
Mashad - Iran
(Ex- Vice- Chancellor Islamic Azad University ,Quchan Branch - Iran)

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Effect of Increasing pH on Periphyton Ecological Peat Water

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Abstract— Peat water and peat soil always react with acid, causing obstacles to their utilization. This acidic nature is thought to have occurred starting from the nature of the reaction of acidic water due to the process of changing the organic matter that happens in it. This study aims to describe and verify if a somewhat neutral pH increases low pH peat water, namely pH 6 and pH 7 on Abundance, diversity, uniformity, and periphyton dominance. The peat water samples used as periphyton culture media were taken from the Pegerriver (i.e. the river where the main research was conducted) with an average water pH of 4.3. Water is reserved for up to 200 litres and stored in a closed container to replace water lost due to evaporation during research activities. The substrate used is dead wood that has been submerged in the Pager river for a long time, with a diameter of 5 - 13 cm. The substrate is uniformly cut to a length of 20 cm. This study, using three treatments, namely peat water without treatment n (A); Peat water is increased to pH 6 (B); and Peat water whose pH has been increased to pH 7 (C). The study's findings showed that there was an effect of treatment on specific gravity, Abundance, diversity index, water temperature, TDS and pH of water at the 5% error level ($p < 0.05$). The uniformity index, dominance index, and dissolved O₂ were not different in peat water without pH, the pH was increased to 6 pH, or the pH was increased to pH 7. The highest number of types was found in untreated peat water with an average number of species of 4,667, Abundance. The highest was found in peat water, whose pH was increased to pH 7 with an average abundance of 10.444. The highest Diversity Index is found in peat water without treatment with an average Diversity Index of 1.315. The highest water temperature is found in peat water without treatment, with an average water temperature of 27.994. The most elevated TDS was found in peat water, whose pH was increased to pH 7 with an average TDS of 203.444. The highest pH is found in peat water, whose pH has been increased to pH 7 with an average PH of 7,239.

Keywords— *Peat Water, pH, Ecological Periphyton, Autotrophic Organisms.*

REFERENCES

- [1] Browder, J. A., Gleason, P. J., & Swift, D. R. (1994). Periphyton in the Everglades: spatial variation, environmental correlates, and ecological implications. *Everglades: The ecosystem and its restoration*, 379-418.

- [2] Buschmann, C., Röder, N., Berglund, K., Berglund, Ö., Lærke, P. E., Maddison, M., ... & van den Akker, J. J. (2020). Perspectives on agriculturally used drained peat soils: Comparison of the socioeconomic and ecological business environments of six European regions. *Land Use Policy*, 90, 104181.
- [3] Ferguson, H. M., Slagle, E. J., McCann, A. A., Walls, J. T., Wyatt, K. H., & Rober, A. R. (2021). Greening of the boreal peatland food web: Periphyton supports secondary production in northern peatlands. *Limnology and Oceanography*.
- [4] Greenwood, J. L., & Lowe, R. L. (2006). The effects of pH on a periphyton community in an acidic wetland, USA. *Hydrobiologia*, 561(1), 71-82.
- [5] Kovaleva, E. I., Trofimov, S. Y., & Zhongqi, C. (2021). Impact of oil contamination on ecological functions of peat soils from West Siberia of Russia. *Journal of Environmental Quality*, 50(1), 49-62.
- [6] Li, J. Y., Deng, K. Y., Cai, S. J., Lu, H. L., & Xu, R. K. (2020). Periphyton has the potential to increase phosphorus use efficiency in paddy fields. *Science of The Total Environment*, 720, 137711.
- [7] Matsuska, O., Suchorska, O., & Gumnitsky, J. (2020). The Ability of Peat in Adsorption of Biogenic Elements from Water Environment. *Journal of Ecological Engineering*, 21(4).
- [8] Mazzei, V., Wilson, B. J., Servais, S., Charles, S. P., Kominoski, J. S., & Gaiser, E. E. (2020). Periphyton as an indicator of saltwater intrusion into freshwater wetlands: insights from experimental manipulations. *Ecological Applications*, 30(3), e02067.
- [9] McCahon, C. P., Carling, P. A., & Pascoe, D. (1987). Chemical and ecological effects of a Pennine peat-slide. *Environmental Pollution*, 45(4), 275-289.
- [10] Ungureanu, G., Balan, C. D., & Volf, I. (2018). Application of Sphagnum moss peat in ecological remediation of oxyanions contaminated aqueous solutions. *Environmental Engineering & Management Journal (EEMJ)*, 17(4).

Criminal Law Policy Corporate Liability For Forest and Land Fire Crimes

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Abstract— Corporate responsibility for forest and land fires crimes in court decisions in Indonesia and future criminal law policies regarding corporate responsibility as ideal policies. This dissertation research is a normative legal research using primary, secondary and tertiary legal materials. The data that is being sought are the laws and regulations in the environmental sector and the minutes of their discussion as well as the decision of the forest and land fire crime court which has permanent legal force. How to obtain data is done through library research and document study. Approaches to analyzing problems are the statute approach, the case approach, the conceptual approach, the historical approach and the comparative approach. The data analysis used qualitative methods, meanwhile the conclusion was drawn deductively. The conclusion of this dissertation is that the regulation and formulation of corporate criminal responsibility in criminal acts in the environmental sector is divided into two models, prosecution and criminal sanctions to: (1) management or giving orders or activity leaders; (2) management and / or corporations. The execution of the criminal responsibility system for forest and land fire crimes, consisting of: the decisions of PT NSP, PT SSS, PT PGK, PT Adei Plantation and PT MIB. The target of individual prosecution of PT NSP, namely the head of branches and corporations, PT SSS is an individual, namely the main director and the Operations Manager and the corporation represented by the management. PT PGK is an individual, namely the Plantation Manager. PT Adei Plantation is an individual, namely General Manager, Regional Director and Ex President Director and corporations. Meanwhile, PT MIB is only a corporation. The upcoming criminal law policy, regulatory reformulation will focus on: (1) using corporate nomenclature. (2) the parties that should be prosecuted are the corporations and / or their management. (4) assessment of corporate errors: (a) Managers who have functional positions and / or controlling personnel and / or giving orders or activity leaders do not take steps to comply with reactive obligations needed to prevent, prevent bigger impacts, ensure compliance with applicable legal provisions. (b) Managers who have functional positions and / or controlling personnel and / or giving orders or activity leaders knowingly, or know, or carelessly have committed the criminal act in question, and / or expressly, and / or imply, and / or have implicitly authorized or permitted the committing of a criminal act; (c) Managers who have a functional and / or corporate position are proven not to create and / or own and / or improve and / or maintain a work culture that requires compliance with the provisions of laws and regulations. (d) the corporation has a work culture that directs, encourages, tolerates, or results in criminal acts. (e) The controlling personnel as the beneficial owner of the corporation is proven to have directed or influenced corporate policy which eventually became a criminal act. (f) the corporation benefits either directly or indirectly

from a criminal act. (g) the crime is committed for the benefit of the corporation. The principal crimes, additional crimes and acts of crime are regulated and formulated separately with a cumulative-alternative sanction formulation system and an indeterminate sentence system of punishment.

Keywords— *Criminal law policy, corporate responsibility, crime, forest and land fires.*

REFERENCES

- [1] Aziz, A., Syahrin, A., Din, M., & Rasyid, M. N. Corporate Criminal Responsibility In The Criminal Offense Of Burning Land, Forests Or Plantation.
- [2] Christiawan, R. (2020, May). Dealing with land and forest fires through improvement of regulations. In *IOP Conference Series: Earth and Environmental Science* (Vol. 504, No. 1, p. 012018). IOP Publishing.
- [3] Dinh, T. M., & Nguyen, D. L. (2020). Criminal law policy on environmental crimes in context of sustainable development in Vietnam. In *E3S Web of Conferences* (Vol. 175, p. 14004). EDP Sciences.
- [4] Elbaar, E. F., & Meilantina, M. (2020). The Role of Women in Mitigation of Forest and Land Fires based on Local Wisdom. *Systematic Reviews in Pharmacy*, 11(6).
- [5] Fahmi, F., & Yenni, T. (2020, April). Forest Destruction in Riau Province: Identifying the Company's Legal Responsibility. In *IOP Conference Series: Earth and Environmental Science* (Vol. 469, No. 1, p. 012029). IOP Publishing.
- [6] Hafrida, H., Helmi, H., & Permatasari, B. (2020). The Implementation of the Strict-Liability Principle to the Perpetrators of Forest and Land Burning. *Padjadjaran Journal of Law*, 7(3), 314-333.
- [7] Hartiwingsih, H., Hudi, M. H. A. S., & Riska, R. A. F. Factors Affecting Process Law enforcement Crime Forest Fire conducted by the Corporation and Abatement Efforts (Case Study in Riau Province).
- [8] Keiter, R. B. (2006). The law of fire: reshaping public land policy in an era of ecology and litigation. *Envtl.L.*, 36, 301.
- [9] Prasetyoko, I. A., Ludang, Y., Heriamariaty, P., & Elia Embang, A. (2020). Studies on the Causes of Forest and Land Fires in the Palm Oil Plantation in Central Kalimantan Province. *International Journal of Advanced Research in Engineering and Technology (IJARET)*, 11(5).
- [10] Ridwan, M. (2020). The Dynamics of Corporate Criminal Liability in Riau Province as a Result of Forest and Land Fires.
- [11] Satria, H. (2018). Environmental Pollution: Assessing the Criminal Liability of Corporations. *Hasanuddin Law Review*, 4(2), 194-203.

Estimated The Potential Of Aquifers In Transitional Peat Lands In The Area Of Dusun Sidodadi, Pulang Pisau District, Central Kalimantan Province

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Abstract— Peatland fire mitigation in Central Kalimantan requires water; one of the sources is groundwater. The use of groundwater must be taken into account properly because, as it is known that its obtainability is limited, so complete data is needed about the potential of groundwater. This study aims to find out transmission, storage, conductivity, and aquifer discharge in areas representing transitional peat, namely in Sidodadi Village, Pulang Pisau Regency, Central Kalimantan Province. This study uses a quantitative approach that is the variable measurement in unconfined aquifers with pumping test method at 1 (one) test well and assisted with 3 (three) monitoring wells. While qualitatively determining the general direction of groundwater flow using data from the Central Kalimantan Groundwater Basin Map. The results of the study with an area of influence of 6.28 hectares were $T=3.00 \times 10^{-3} \text{ m}^2/\text{s}$, $S = 0.000065$, $K = 3.2851 \times 10^{-1} \text{ m/s}$, and the groundwater potential was $22.50 \text{ m}^3/\text{h}$.

Keywords— Unconfined Aquifer Variables, Pumping Test, Peatland.

REFERENCES

- [1] Belyea, L. R. (2009). Nonlinear dynamics of peatlands and potential feedbacks on the climate system. *Carbon cycling in northern peatlands*, 184, 5-18.
- [2] Deines, J. M., Schipanski, M. E., Golden, B., Zipper, S. C., Nozari, S., Rottler, C., ... & Sharda, V. (2020). Transitions from irrigated to dryland agriculture in the Ogallala Aquifer: Land use suitability and regional economic impacts. *Agricultural Water Management*, 233, 106061.
- [3] Dwire, K. A., Mellmann-Brown, S., & Gurrieri, J. T. (2018). Potential effects of climate change on riparian areas, wetlands, and groundwater-dependent ecosystems in the Blue Mountains, Oregon, USA. *Climate Services*, 10, 44-52.
- [4] Ghezzi, D., Filippini, M., Cappelletti, M., Firrincieli, A., Zannoni, D., Gargini, A., & Fedi, S. (2021). Molecular characterization of microbial communities in a peat-rich aquifer system contaminated with chlorinated aliphatic compounds. *Environmental Science and Pollution Research*, 1-19.
- [5] Glass, B. K., Rudolph, D. L., Duguay, C., & Wicke, A. (2021). Identifying groundwater discharge zones in the Central Mackenzie Valley using remotely sensed optical and thermal imagery. *Canadian Journal of Earth Sciences*, 58(2), 105-121.

- [6] Guerrero-Morales, J., Fonseca, C. R., Gómez-Albores, M. A., Sampedro-Rosas, M. L., & Silva-Gómez, S. E. (2020). Proportional Variation of Potential Groundwater Recharge as a Result of Climate Change and Land-Use: A Study Case in Mexico. *Land*, 9(10), 364.
- [7] Harvey, J. W., Krupa, S. L., & Krest, J. M. (2004). Ground water recharge and discharge in the central Everglades. *Groundwater*, 42(7), 1090-1102.
- [8] Hoyt, A. M., Chaussard, E., Seppalainen, S. S., & Harvey, C. F. (2020). Widespread subsidence and carbon emissions across Southeast Asian peatlands. *Nature Geoscience*, 13(6), 435-440.
- [9] Kurylyk, B. L., Hayashi, M., Quinton, W. L., McKenzie, J. M., & Voss, C. I. (2016). Influence of vertical and lateral heat transfer on permafrost thaw, peatland landscape transition, and groundwater flow. *Water Resources Research*, 52(2), 1286-1305.
- [10] Yulianti, N. (2018). *Pengenalan bencana kebakaran dan kabut asap lintas batas: studi kasus eks proyek lahan gambut sejuta hektare*. Penerbit IPB Press.