



Handling of Tofu Liquid Waste in Central Sokaraja Village, Banyumas Regency Based on UUPPLH

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Abstract

Pollution of water, air, soil, and disposal of hazardous and toxic materials (B3) is a problem that must be around communities living around industrial areas. One of the problems that occur due to human activities is air pollution at air sources because it receives a pollution load that exceeds its carrying capacity. Pollution that causes a decrease in water quality can come from waste. Tofu liquid waste pollution is one of the causes of environmental pollution and can cause disease to humankind and manage a wastewater treatment system based on the nature and character of the tofu wastewater itself. This research discusses handling tofu liquid waste handling in the Village of Central Sokaraja based on Law Number 32 of 2009 concerning Environmental Protection and Management (*Perlindungan dan Pengelolaan Lingkungan Hidup*, UUPPLH). This research approach method is normative juridical. The normative juridical method is carried out through literature studies that examine secondary data in the form of laws and regulations, court decisions, agreements, contracts, or other legal documents, research results, assessment results, and other references. The handling of liquid tofu waste is not going well in Hamlet Muntug and Hamlet Kauman, Central Sokara Village. Due to WWTP, whose construction and pump system are not under the WTP establishment standards, and the public awareness of the craftsmen who know about environmental awareness. Furthermore, WWTP must carry out a full assessment to handle industrial tofu waste and involve competent stakeholders in their fields. Furthermore, the Village Government of Sokaraja provides solutions and education to the surrounding community, especially those involved in industries related to environmental protection and management.

Keywords: Handling, Tofu Liquid Waste, Pollution

Abstrak

Pencemaran air, udara, tanah dan pembuangan limbah bahan berbahaya dan beracun (B3) merupakan persoalan yang harus dihadapi oleh komunitas-komunitas yang tinggal di sekitar kawasan industri. Salah satu masalah yang timbul akibat meningkatnya kegiatan manusia adalah tercemarnya air pada sumber-sumber air karena menerima beban pencemaran yang melampaui daya dukungnya. Pencemaran yang mengakibatkan penurunan kualitas air dapat berasal dari limbah. Pencemaran limbah cair tahu merupakan salah satu penyebab pencemaran lingkungan hidup dan dapat menyebabkan penyakit kepada umat manusia dan pemilihan sistem pengolahan air limbah seharusnya didasarkan pada sifat dan karakter air limbah tahu itu sendiri. Penelitian ini membahas mengenai bagaimana penanganan dan kendala dalam penanganan limbah cair tahu di Desa Sokaraja Tengah berdasarkan Undang-undang Nomor 32 Tahun 2009 tentang Perlindungan dan Pengelolaan Lingkungan Hidup atau UUPPLH. Metode pendekatan penelitian ini adalah yuridis normatif. Metode yuridis normatif dilakukan melalui studi pustaka yang menelaah data sekunder yang berupa Peraturan Perundang-undangan, putusan pengadilan, perjanjian, kontrak, atau dokumen hukum lainnya, serta hasil penelitian, hasil pengkajian, dan referensi lainnya. Penanganan limbah cair tahu tidak berjalan dengan baik di Hamlet Muntug dan Hamlet Kauman Desa Sokara Tengah. Hal ini dikarenakan faktor IPAL yang kontuksi dan sistem pompanya tidak sesuai standar pendirian IPAL, serta kurangnya kesadaran masyarakat para pengrajin tahu tentang kepedulian lingkungan. Serta diperlukan IPAL dengan melakukan pengkajian secara maksimal dalam penanganan limbah cair industri tahu dan melibatkan stakeholder yang berkompeten dalam bidangnya. Dan Pemerintah Desa Sokaraja memberikan solusi dan edukasi kepada masyarakat sekitar khususnya masyarakat yang bergelut di industri tahu terkait perlindungan dan pengelolaan lingkungan hidup.

Kata kunci: Penanganan, Limbah Cair Tahu, Pencemaran

I. Introduction

The rapid development of the times makes people motivated to contribute to development. Development that occurs is from one sector, but many interrelated sectors and relatively rapid development occur in the industrial sector, but not many people pay attention to other aspects of industrial development, such as health and environmental aspects. Environmental problems have become a chronic disease that is felt to be very difficult to cure. During the last 20 years, Indonesia's economic development has led to industrialization. No less than 30,000 industries are operating in Indonesia from year to year. This increase in number has an impact on industrialization, namely an increase in pollution resulting from industrial production processes. Pollution of water, air, soil and disposal of hazardous and toxic waste (B3) is a problem that must be faced by communities living around industrial areas.¹ Small-scale businesses dominate tofu industrial activities in Indonesia with limited capital. In terms of location, this business is also very scattered throughout Indonesia. The human resources involved are generally of a relatively low level of education, and not many have carried out waste treatment.²

One of the problems arising from increased human activities is water pollution in water sources because it receives a pollution load that exceeds its carrying capacity. Pollution that causes a decrease in water quality can come from point sources such as industrial waste, livestock business waste, and non-point sources such as agricultural, plantation, and domestic waste. Furthermore, tofu waste is a centralized waste because tofu waste is the result of industry.³ To take action against cases of environmental pollution which is a negative impact of the rapid development and progress of the city, namely the form of waste disposal by various industries and business entities, the government has issued Law Number 32 of 2009 concerning Environmental Protection and Management in place of Law Number 23 of the Year 1997 concerning Environmental Management.⁴ At the same time, a good and healthy environment is the fundamental right of every Indonesian citizen, which has been mandated in Article 28H of the 1945 Constitution of the Republic of Indonesia, which states that "Everyone has the right to live in physical and spiritual prosperity, to have a place to live and have a good and suitable living environment healthy and entitled to health services. Tofu liquid waste pollution is one of the causes of environmental damage and can cause disease to humankind. The selection of a wastewater treatment system should be based on the nature and character of the tofu wastewater itself. The nature and characteristics of wastewater are very decisive in choosing a wastewater treatment system, especially in the quality of wastewater, which includes parameters of pH, COD (chemical oxygen demand), BOD (biological oxygen demand), and TSS (total suspended solid), liquid waste. Tofu has a high content of organic matter and high levels of BOD and COD. Tofu wastewater has a methane content (CH₄) > 50%, so it is possible to source biogas energy.⁵ Forecast the risk to surface water, namely from the treatment of liquid waste, which is discharged into rivers. Risks arise to the flora, fauna, and humans who use the river. The most significant risk that may occur is the death of aquatic biota, aquatic plants, and aquatic animals. Risks that arise are harmful.⁶ However, tofu liquid waste management still has a lot of destructive impacts on the surrounding environment.

One example of tofu liquid waste pollution occurs in the Village of Central Sokaraja because most of its people are business players in the tofu factory industry. They realize that the tofu factory industry's liquid waste can damage the environment because the waste disposal process into the river is not carried out according to the liquid waste management procedure. It

¹ R.M Gatot P. Soemartono, *Hukum Lingkungan Indonesia*, (Jakarta : Sinar Grafika,1998), hlm.128.

² A. Tresna Sastrawijaya, *Pencemaran Lingkungan*, (Jakarta : Rineka Cipta,2000) hlm 48.

³ Asmadi, *Dasar-Dasar Teknologi Pengelolahan Air Limbah Gosyen*, (Yogyakarta : Publishing,2012) hlm 1-2

⁴ Macmud, S. *Penegakan Hukum lingkungan Indonesia*, (Bandung : Graha Ilmu,2012) hlm.63

⁵ Sri Subekti, Pengolahan Limba Cair Tahu Menjadi Biogas Sebagai Bahan Bakar Alternatif , *Jurnal Fhunwahas*, Vol.1, No.1, (2011)

⁶ Ali Masduqi, Alia Damayanti and Joni Hermana. Analisis Risiko Lingkungan Dari Pengolahan Limbah Pabrik Tahu Dengan Kayu Apu. *Pistia stratiotes L*, Vol.5, No.4, (2004)

happened because of the damage to the Waste Water Treatment Plant (WWTP). To result in a decreased environmental quality which can pollute the environment, such as low water quality. It is necessary to evaluate the tofu factory used so that it is for the environment according to the laws and regulations Number 32 of 2009 concerning Environmental Protection and Management. Therefore, the authors are interested in writing articles with the title "HANDLING OF TOFU LIQUID WASTE IN CENTRAL SOKARAJA VILLAGE, BANYUMAS REGENCY BASED ON UUPPLH."

II. Research Problems

1. How is the handling of liquid tofu waste in Central Sokaraja Village Sokaraja Tengah Village, Banyumas Regency based on Law Number 32 of 2009 concerning Environmental Protection and Management?
2. What are the obstacles faced in handling liquid tofu waste in Central Sokaraja Village, Banyumas Regency, based on Law Number 32 of 2009 concerning Environmental Protection and Management?

III. Research Methods

This research is legal because it analyzes social problems from a legal perspective. Legal research is divided into two aspects, namely legal research with normative aspects and legal research with empirical aspects. This research approach method is normative juridical. The normative juridical method is carried out through literature studies that examine secondary data in the form of laws and regulations, court decisions, agreements, contracts, or other legal documents, research results, assessment results, and other references.⁷ This research is supported by literature related to the problem under study.⁸ Data collection is carried out by library research to obtain data in documents and writings by tracing laws and regulations, documents, scientific literature, and research by experts. This study uses the primary source of secondary data or library materials. Secondary data includes primary legal materials, secondary legal materials, and tertiary legal materials. The data type is secondary data in qualitative data, which is then analyzed by the regulations relating to the problem under study.⁹ The research was conducted in the area of Sokaraja Tengah Village, Banyumas Regency. The data collected and analyzed is then reviewed with a triangulation approach that aims to verify the correctness of the data obtained by researchers from different points of view.¹⁰

IV. Research Results And Discussion

1. Research Results

a. Geographical Condition of Central Sokaraja Village

Central Sokaraja Village has an area of approximately 160,189 ha. Central Sokaraja Village land consists of moorland, residential land, ponds, irrigation, technical rice fields, et cetera. Central Sokaraja Village's land is a fertile land planted with various types of plants, becoming a livelihood source for its residents. The land used for paddy fields is 90,142 ha of the total area in Central Sokaraja Village, only 53,403 ha of land used for settlement. Most of the area in Central Sokaraja Village is 90,142 ha of Central Sokaraja Village.

Land use significantly affects the condition of natural resources, especially the availability of land for forests. Inappropriate management and land distribution will

⁷ Badriyah Khaleed, *Legislative Drafting Teori dan Praktik Penyusunan Peraturan Perundang-undangan*, (Yogyakarta : Medpress Digital, 2014), 41.

⁸ Salim HS, *Penerapan Hukum pada Penelitian Tesis dan Disertasi*, (Jakarta : PT Rajagrafindo, 2013), hlm 26

⁹ Mathew, Miles dan Michel Huberman, 2009, *Analisis Data Kualitatif : Buku Sumber tentang Metode-metode Baru*, (Jakarta: UI Pres, 2009), hlm 102.

¹⁰ Sugiyono, *Metodologi Penelitian Pendidikan*, (Bandung : Alfabeta, 2007), hlm. 303.

impact the conversion of the available land use to meet the community's needs, which always feel insufficient.¹¹

The tofu industry in Central Sokaraja Village is small (home industry), managed by rural communities with a relatively low level of education, so they have not thought about a treatment system, so the operational wastewater treatment is one of the most important considerations. Tofu industrial wastewater treatment, a system with straightforward and practical processing operations and affordable maintenance costs, is usually chosen.

b. Condition of Human Resources in Central Sokaraja Village

The number of family heads in Serang Village is around 6,285 consisting of adults and small children. 37.5% (2,362) of that population were people who had migrated or moved to another place without resorting to the village government, and 62.5% (3,933) were people who lived in the village of Central Sokaraja. Meanwhile, there are about 508 residents in the village of Central Sokaraja who are engaged in entrepreneurship, which consists of various businesses, one of which is Batik craftsmen in Hamlet Kauman, Getuk Sokaraja in the village of Central Sokaraja, and Tofu in Hamlet Muntug. However, for the tofu industry in Hamlet Muntug, which tends to be dominant, there are around 57 people, while in Hamlet Kauman, there are four people involved in the tofu industry as a livelihood. In this condition, the tofu industry in Hamlet Muntug is the dominant Hamlet in the tofu industry. Furthermore, Hamlet Muntug is known to be a Hamlet that is categorized as a slum hamlet. Furthermore, the slum environment is caused by the Hamlet Muntug community, who tend not to pay attention to the surrounding natural conditions due to the waste they produce.¹²

2. Discussions

a. Handling of Tofu Liquid Waste in Central Sokaraja Village, Banyumas Regency Based on Law Number 32 Of 2009 concerning Environmental Protection and Management.

Tofu is a type of protein source food based on soybeans, which is very popular with Indonesians. The tofu industry needs water, namely sorting, absorbing, removing the skin, washing, milling, boiling, and filtering. The definition of pollution is the entry or inclusion of living things, substances, energy, or other components into the water, air/soil, or changes in their composition (composition) by human activities or natural processes. The tofu industry produces waste, both solid and liquid waste. Solid waste is produced from the filtering and clumping process. Most of this waste is sold by craftsmen and processed into soft tempeh, tofu dregs crackers, animal feed, and processed into tofu dregs flour, which will be used as a base for making dry bread cake.¹³ While the liquid waste is produced from the washing, boiling, pressing, and printing processes of tofu, the resulting liquid waste is very high. Tofu liquid waste contains high organic matter and high COD levels (chemical oxygen demand), BOD (biological oxygen demand), if directly discharged into water bodies, it will reduce the carrying capacity of the environment so that the tofu industry requires a waste treatment that aims to reduce the risk of existing pollution loads.¹⁴ However, on the other hand, the tofu industry produces liquid waste that can pollute and damage the environment.

¹¹ Nanik Buwono, Gladi Muda, Sulastri Arsad, Pengelolaan Mata Air Sumberawan Berbasis Masyarakat di Desa Toyomarto Kecamatan Singosari Kabupaten Malang, *Jurnal Ilmiah Perikanan dan Kelautan* Vol. 9, No. 1, (2017): 28.

¹² Interview with the secretary of the Central Sokaraja Village (Taken on 15 December 2020).

¹³ Ginting, H & Zul, M. Peranan Kepolisian dalam Penerapan Restorative Justice terhadap Pelaku Tindak Pidana Pengerojukan yang Dilakukan oleh Anak dan Orang Dewasa, *Jurnal Ilmiah Penegakan Hukum*, Vol. 5, No. 2, hlm. 32-40.2018.

¹⁴ Jerold, Isnaini. Upaya Imigrasi dalam Penerapan Sanksi Pidana Terhadap Pengguna Dokumen Perjalanan Palsu pada Kantor Imigrasi Kelas I Khusus Medan, *Arbiter: Jurnal Ilmiah Magister Hukum*. Vol. 1, No.2, hlm. 126-134. 2019.

Hamlet Muntug, Sokaraja Tengah Village, Sokaraja Subdistrict, as a village that concentrates the community on tofu production, currently there are 57 tofu makers, most of the tofu industry Central Sokaraja Village is a small industry with weak capital. So they object to carrying out installation construction activities. Tofu industrial liquid waste processing requires relatively high costs as well as operational and maintenance costs. The average production capacity of each maker per day is 740 kg of soybeans. The waste produced during the tofu production process includes tofu dregs and wastewater. The wastewater discharge generated every day by craftsmen averages 5000-6000 liters from each of these average production capacities. This accumulation of waste significantly affects the environment due to strong odors and impacts river water quality. Banyumas Regency has gradually carried out activities in the context of controlling environmental pollution, one of which was in 1997 with the construction of a Waste Water Treatment Plant (WWTP) for liquid tofu waste with a volume of 50 m³ of waste storage, which was funded from the Special Allocation Fund (*Dana Alokasi Khusus*, DAK) and APBD.

The inhabitants of Hamlet Kauman, Central Sokaraja Village, Sokaraja District, as the majority of the community, work as batik craftsmen. There are only four people who make tofu, so the industrial waste of Tofu in Dukuh Kauman is not too much. However, the industrial tofu waste mixes with Batik artisans' waste, causing pollution. The tofu industry in Hamlet Kauman has been around since 2018, which were residents who moved from Hamlet Muntug, initially a community of Hamlet Muntug.

In principle, the tofu WWTP uses anaerobic and aerobic processes. An anaerobic filter biodigester is used for the anaerobic process, while the aerobic process uses a trickling filter. The digester filter is FAD, which is bamboo, which is cut into small pieces (5cm) and soaked in cow dung as a starter. Similarly, the filter media in the trickling filter used bamboo pieces. BOD and COD reduction efficiency. This tofu WWTP is approximately 60%. Besides being a tofu waste processor, this WWTP also produces biogas, currently being streamed to 61 residents' stoves in turns. Before use, the biogas produced from the tofu waste digester is stored in a gas holder in a fiberglass floating drum. This tofu WWTP has reduced water pollution in the Hamlet Muntug tofu industrial area, where previously tofu waste was disposed of without treatment. Another benefit that residents get from WWTP is biogas, which they can use for cooking. However, the WWTP was damaged in 2008, so that from 2008 to the present, Central Sokaraja Village has experienced water pollution due to liquid waste from tofu production activities by tofu makers. The environment becomes dirty and smelly, so it needs analysis and improvement to run more optimally.

The liquid waste produced by the tofu factory, which is disposed of into the river around the tofu factory, is environmental pollution in Article 1 Number 14 of Law Number 32 of 2009 concerning Environmental Protection and Management (*Perlindungan dan Pengelolaan Lingkungan Hidup*, UUPPLH). "Environmental pollution is the entry of living things, substances, energy, and/or other components into the environment by human activities so that they exceed the stipulated environmental quality standards." As a result of liquid tofu waste disposal from the tofu factory in Sokaraja Village, the river's ecosystem is disturbed. Disposal of this waste causes discoloration of river water, the appearance of foam, and unpleasant odors. The smell from the tofu-making process indicates that the waste treatment system is less than perfect. That causes environmental pollution of the causeway in Article 1 Number 16 of Law Number 32 of 2009 concerning Management of Environmental Protection and Management (UUPPLH), the statement "An environmental destruction is an act that causes immediate or direct changes physical, chemical characteristics. And/ or living environment so that it exceeds the criteria for environmental damage."¹⁵ Even though Law Number 32 of 2009 concerning

¹⁵ Siregar, R.D.W, Mubarak, R & Zulyadi, R. Peranan Kepolisian Dalam Penerapan Restorative Justice Terhadap Kecelakaan Lalu Lintas Di Wilayah Polsek Deli Tua (Studi Kasus Polsek Delitua). *Juncto: Jurnal Ilmiah Hukum*, Vol. 1, No. 2 (2019): 150-157.

Environmental Protection and Management is allowed to dispose of waste, waste disposal must meet the requirements as stated in Article 20 paragraph (3), which states that everyone is allowed to dispose of waste into environmental media with the following requirements: a. Meet environmental quality standards; b. Please obtain permission from the Minister, Governor, or Regent / Mayor under their respective authorities. The above points are also emphasized in Law Number 32 of 2009 concerning Environmental Protection and Management, Article 67, which states that everyone is obliged to maintain environmental sustainability and control environmental pollution and/or damage. Furthermore, we have to appropriately safeguard God's priceless gift in the form of nature and its biodiversity, so we must preserve this nature and maintain the quality standards of wastewater.

b. Constraints Faced in Handling Tofu Liquid Waste in Central Sokaraja Village, Banyumas Regency Based on Law Number 32 of 2009 concerning Environmental Protection and Management

Efforts in handling liquid waste certainly have various obstacles. The obstacles faced in processing tofu liquid waste in the Village of Central Sokaraja are based on Law Number 32 of 2009 concerning Environmental Protection and Management. Several factors become obstacles in handling tofu industrial liquid waste, namely:

1) WWTP factor

Lack of attention from related parties in WWTP management. It can be seen from the construction used and the pumping system at WWTP that do not meet the WWTP loading standards so that the WWTP operational system does not last forever. Although repairs have been made, they experience continuous damage. The community takes the last resort, namely disposing of liquid waste from tofu production into rivers or even village irrigation channels. Besides, the land used for WWTP operations is community land. The landowner will convert the WWTP, located in one of the community lands, because it is no longer useful. It would make it difficult for Central Sokaraja because the previous village head had lost the WWTP community land agreement.¹⁶

2) Community Factors

The people of Central Sokaraja Village pay lesser attention to the consequences of dumping liquid tofu waste into rivers or even village irrigation channels. It is due to the less pronounced impacts on society. Even though the water conditions are bad or the smell is not wearing, the people of Central Sokaraja Village are indifferent. Because the income for daily living needs is obtained from tofu production. Besides, the surrounding community does not want to use the WWTP because of the continuous damage. The community prefers to dispose of the liquid tofu waste into the river or the village irrigation system, which is more comfortable and does not require expensive costs to manage the tofu liquid waste disposal.¹⁷

V. Conclusions

Handling of Tofu liquid waste in Sokaraja Tengah Village, Banyumas Regency based on Law Number 32 of 2009 concerning Environmental Protection and Management is not going well. It happened because the WWTP was damaged in 2008, so that 2008 until now in Central Sokaraja Village, it has experienced water pollution due to liquid waste from tofu production activities by tofu makers. The environment becomes dirty and smelly. The liquid waste produced by the tofu factory, which is disposed of into the river or village irrigation channels around the tofu factory, is a form of environmental pollution and environmental destruction as mentioned in Article 1 Number 14 and Article 1 Number 16 in Law Number 32 of 2009

¹⁶ Results of interviews with the Village Secretary Sokaraja Tengah and residents. On November 16, 2020.

¹⁷ Results of interviews with residents of the village of Central Sokaraja and residents. On November 17, 2020.

concerning Protection and Environmental Management (*Perlindungan dan Pengelolaan Lingkungan Hidup*, UUPPLH).

The obstacles faced in handling liquid tofu waste in the Central Sokaraja Village, Banyumas Regency (based on Law Number 32 of 2009 concerning Environmental Protection and Management), namely first, the factor of WWTP that is not functioning or damaged, which can be seen from the construction used and the pumping system at WWTP that do not meet the standards for making WWTP. Second, Central Sokaraja Village people pay less attention to the consequences of dumping liquid tofu waste into rivers or even village irrigation channels.

VI. Suggestions

- a. It is necessary to improve the WWTP by carrying out a maximum study in handling tofu industrial wastewater. If necessary, the local government will make a new WWTP by considering the construction and pump system at the WWTP that meets the WWTP manufacturing standards and involves competent stakeholders in their fields in realizing a tofu industrial environment that does not cause pollution and environmental damage in Central Sokaraja Village.
- b. The Village Government of Sokaraja provides solutions and education to the surrounding community, especially those who are involved in the tofu industry related to environmental protection and management

References

- Asmadi. *Dasar-Dasar Teknologi Pengolahan Air Limbah Gosyen*. Yogyakarta: Publishing, 2012
- Badriyah Khaleed. *Legislative Drafting Teori dan Praktik Penyusunan Peraturan Perundang-undangan*, Yogyakarta : Medpress Digital, 2014.
- Isnaini, Jerold, S. Upaya Imigrasi dalam Penerapan Sanksi Pidana Terhadap Pengguna Dokumen Perjalanan Palsu pada Kantor Imigrasi Kelas I Khusus Medan. *Arbiter: Jurnal Ilmiah Magister Hukum*. Vol. 1, No. 2. (2019): 126-134.
- Law Number 32 of 2009 concerning Environmental Protection and Management
- Masduqi, Ali, Alia Damayanti, Joni Hermana. 2004. Analisis Risiko Lingkungan dari Pengolahan Limbah Pabrik Tahu dengan Kayu Apu. *Pistia stratiotes L*, Vol.5, No.4.
- Mathew, Miles and Michel Huberman. *Analisis Data Kualitatif : Buku Sumber tentang Metode-Metode Baru*. Jakarta: UI Pres. 2009.
- S Macmud. *Penegakan Hukum lingkungan Indonesia*. Bandung : Graha Ilmu, 2012.
- Salim, HS. *Penerapan Hukum pada Penelitian Tesis dan Desertasi*. Jakarta : PT Rajagrafindo, 2013.
- Sastrawijaya, A. Tresna. *Pencemaran Lingkungan*. Jakarta : Rineka Cipta, 2000
- Soemartono, R.M Gatot P. *Hukum Lingkungan Indonesia*. Jakarta : Sinar Grafika, 1998.
- Subekti, Sri. Pengolahan Limba Cair Tahu Menjadi Biogas Sebagai Bahan Bakar Alternatif. *Jurnal Fhunwahas*, Vol.1, No.1, 2011.
- Sugiyono. *Metodologi Penelitian Pendidikan*. Bandung : Alfabeta, 2007.
- Sulastri Arsad, Nanik Buwono, Gladi Muda. Pengelolaan Mata Air Sumberawan Berbasis Masyarakat di Desa Toyomarto Kecamatan Singosari Kabupaten Malang, *Jurnal Ilmiah Perikanan dan Kelautan* Vol. 9, No. 1. 28. 2017
- The 1945 Constitution of the Republic of Indonesia
- Zul, M, Ginting, H. Peranan Kepolisian dalam Penerapan Restorative Justice terhadap Pelaku Tindak Pidana Pengeroyokan yang Dilakukan oleh Anak dan Orang Dewasa. *Jurnal Ilmiah Penegakan Hukum*, Vol. 5, No. 2. (2018): 32-40.
- Zulyadi, R Siregar, R.D.W, Mubarak, R. Peranan Kepolisian Dalam Penerapan Restorative Justice Terhadap Kecelakaan Lalu Lintas Di Wilayah Polsek Deli Tua (Studi Kasus Polsek Delitua). *Juncto: Jurnal Ilmiah Hukum*. Vol. 1, No. 2. (2019): 150-157.