

## **Juridical Analysis of the Effectiveness of Solid Medical Waste Management at the Health Center in Batam City**

**Frisca Wulandari<sup>1</sup>, F.Yudhi Priyo Amboro<sup>2</sup>, Triana Dewi Seroja<sup>3</sup>**

Universitas Internasional Batam, Indonesia

frisca\_13@yahoo.com, yudhi.amboro@gmail.com, triana\_dewi\_seroja@yahoo.com

### **Abstract**

An environment is a spatial unit consisting of all objects, energy sources, conditions, and living things whose behavior affects the continuity of life and human welfare and how this behavior relates to other living things. Medical waste is waste that has a greater influence on the emergence of infections because it contains pathogenic agents which have an impact on causing disease. With the problem of waste treatment, especially solid medical waste, especially during this pandemic, it is known that dealing with these problems requires a system that regulates and becomes a reference for achieving a standard of living and sustainable development. The Theory of Legal Effectiveness and Development Law Theory was used to analyze the implementation of this research. The method used in this study uses empirical juridical methods. The empirical legal research method is based on realities in the field through observations at 3 (three) Puskesmas in Batam City, namely Puskesmas Sekupang, Puskesmas Mentarau, and Puskesmas Sungai Langkai, which respectively are samples of the highest, medium and lowest total waste production within Dinas Kesehatan Kota Batam. Samples were taken by purposive sampling method.

**Keywords:** solid medical waste, Batam

### **Introduction**

Development is an effort made by humans consciously, planned, comprehensively, controlled, and continuously or continuously for the sake of realizing a better life. (Madi Irawan, 2017) In essence, development aims to achieve an increase in the standard of living for the people who carry it out. However, we cannot deny that development is always closely related to the environment. (Soemantri, 2017)

By definition, the environment can be said to be a spatial unit consisting of all objects, energy sources, conditions, and living things whose behavior influences the continuity of life and human welfare and how this behavior relates to other living things. (Soemantri, 2017) ) In his life, humans have basic rights to obtain a good environment for their health. As stated in "Article 28 H paragraph (1) and paragraph (2) of the 1945 Constitution of the Republic of Indonesia states that a good and healthy environment is a fundamental and constitutional right of every Indonesian citizen." ("The 1945 Constitution of the Republic of Indonesia ( Article 28



H,1 and 2),” n.d.) In other words, the environment is the most important thing in the life of all living things on this earth. (Fadilla, 2021)

According to "Article 59 of Law Number 32 of 2009 Concerning Environmental Protection and Management, everyone who produces hazardous and toxic waste (B3) is required to manage the waste they produce. If they are unable to manage the waste themselves, then the management is transferred to another party who has a permit in accordance with laws and regulations." ("Law No. 32 of 2009 Concerning Environmental Protection and Management. State Gazette of the Republic of Indonesia Number 140," 2009)

Medical waste is waste that has a greater influence on the emergence of infections because it contains pathogenic agents / which have an impact on causing disease. The high amount of waste generated is a continuous phenomenon as long as there are human activities in the health sector. Medical waste management is a new issue magnified by a lack of training, awareness and financial resources to support solutions to the waste problems we face. The initial process of waste treatment starts from the collection and disposal of waste, this is very important because it has a direct impact on public health and environmental health risks. Water, air, soil, insects, food, and people's behavior can carry various types of disease and all causes of disease are in the environment. (Marta, 2018).

Based on the description above, waste originating from health service activities can be categorized as B3 waste (hazardous and toxic materials). It is said to be hazardous waste because it has the nature, concentration and/or amount, either directly or indirectly, which can damage and endanger human health and pollute the surrounding environment. There is a need to carry out medical waste treatment in an integrated manner because of the quite large impact on humans and other living things if not managed properly. ("Law No. 32 of 2009 Concerning Environmental Protection and Management. State Gazette of the Republic of Indonesia Number 140," 2009)

Health service facilities/facilities include hospitals, health centers, clinics, independent practice sites, practicing midwives, etc. Puskesmas as a public organization unit that has roles and responsibilities in public services in the health sector, which are organized according to standards and requirements. (Irawan, Handoyono, & Aprina, 2019) One of the goals of the Puskesmas is to create a healthy work space for the Puskesmas and the surrounding community can live in a healthy environment. ("Regulation of the Minister of Health No 43 of 2019," 2019) Puskesmas have the duty to protect the environment and public health as well as certain responsibilities related to the management of waste generated from these activities. This is a very important requirement for achieving a healthy environment. (Mirawati, Budiman, &

Tasya, 2019) As mandated by "Law Number 36 of 2009, Article 6 concerning Health states that everyone has the right to a healthy environment, in order to achieve good health. Optimal health levels can only be achieved by developing health through an approach to early prevention and disease maintenance." ("Law No.36 of 2009 Concerning Health. State Gazette of the Republic of Indonesia No.1441," 2009)

The waste generated by the puskesmas can be in the form of liquid medical waste and solid medical waste. (Yustina, 2021) The management of solid medical waste is an activity that includes reduction, storage, collection, storage, transportation, use, processing, and/or stockpiling. ("UU No. 32 of 2009 Concerning Environmental Protection and Management State Gazette of the Republic of Indonesia Number 140," 2009) The problem is, some of them are managed properly, because the handling is complex and the costs incurred are quite high. (Yustina, 2021) Waste treatment Community medical treatment for medical institutions is an effort to process medical waste in which all stages are carried out in the community, according to the needs and possibilities of the community, in accordance with "Regulation of the Minister of Health Number 18 of 2020 concerning Disposal of medical waste in health care facilities Article One (1)".( Regulation of the Minister of Health No.18 of 2020 concerning Handling of Medical Waste in Region-Based Health Service Facilities, 2020).

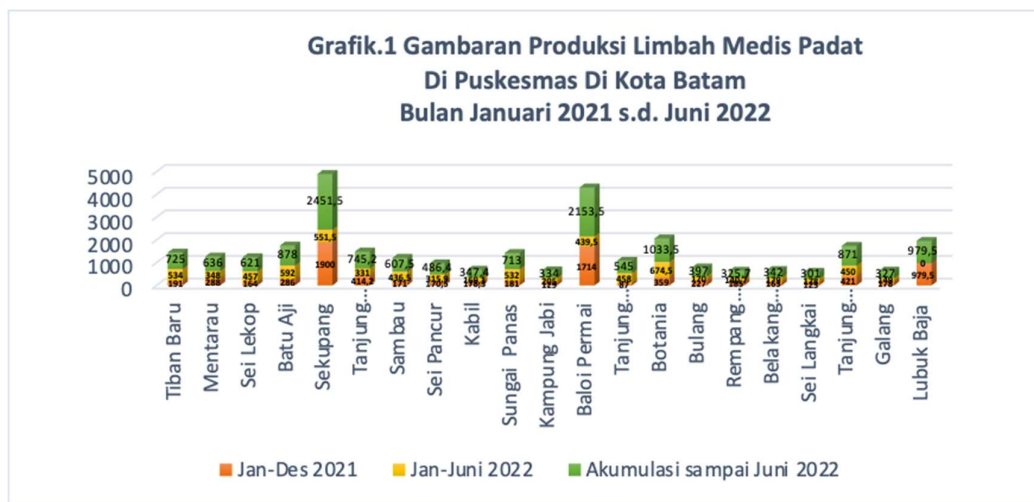
According to data from the Ministry of National Development Planning ("PPN")/Bappenas, the accumulation of solid medical waste from the use of personal protective equipment could increase from three times to four times in 2020. (Ruli Satriadi, 2021) Related to the problem of solid medical waste, in several cities in Indonesia There was a finding of solid medical waste in Bekasi City in 2021, near an area often used by children to play. (Dany Garjito, 2021) A similar incident also occurred in Pontianak City in 2021, the community found piles of solid medical waste scattered beside the gutters in the city. (Hendra Cipta & Khairina, 2021) In Semarang City, solid medical waste was found in the play environment at SDN 03 Lodoyong, Semarang Regency, namely in the form of used syringes, used gauze and blood tubes. (Marta, 2018)

In Batam City, in 2019, used syringes, bottles of used infusion fluids, and leftover medicines were found scattered on the side of the road in front of Permata Hijau Housing Complex, Bukit Tempayan, Batuaji. The source of the waste is unknown, because it was found by residents during mutual cooperation in the residential area. (Aris, 2019) This condition requires government action to regulate, monitor and control it, especially so that medical waste does not have a negative impact on society. (Yustina , 2021) Solid medical waste generated from puskesmas activities is a waste material that can cause environmental pollution and

environmental health problems because it contains very dangerous chemicals. (Amin, Qariati, & Jalpi, 2011) This can cause environmental problems and allow causing accidents and disease transmission in the community. (Marta, 2018) Special attention must also be paid to increasing masks and gloves at the household level. In addition, solid medical waste is at risk of mixing with other household waste, and waste transport workers generally work without personal protective equipment or use inadequate personal protective equipment. (Buana, 2021).

This phenomenon is worrying, considering that medical waste is included in the category of very dangerous B3 waste. However, the management of this solid medical waste requires a lot of money. In this case, environmental health occurs through improving environmental restoration, both physically, chemically, and biologically in terms of location and material form. Because environmental conditions can affect the condition of public health. In essence the level and degree of human welfare can affect the state of public health. (Madi Irawan, 2017) Solid medical waste is a problem faced by almost all countries in the world, both developed and developing countries such as Indonesia. From the recapitulation data of B3/medical waste in 2021 it will reach 66,353,505.02 Tons. In fact, this data has decreased in line with the decline in Covid-19 cases in Indonesia. You can imagine how much waste was generated at the peak of the case. (Cahyandari & Pradana, 2022)

Data from the Batam City Health Office, from 21 Puskesmas in Batam City, the total amount of solid medical B3 waste produced by all Puskesmas is 15.82 tons in 2021 until mid-2022. The following is a diagram of the waste generated by the Puskesmas in 2021 until mid-2022.



**Diagram 1 Health Center Waste in 2021 to 2022**

**Source: Batam City Health Service Data for 2021-2022**

The biggest contributor to producing solid medical B3 waste was the Sekupang Health Center with a total of approximately 2.4 Tons, then the Baloi Permai Health Center of approximately 2.1 Tons and the Botania Health Center of approximately 1 Ton from January 2021 to June 2022 .

Identifying problems based on the gap between *das sollen*, according to Article 59 of Law Number 32 of 2009 concerning Environmental Protection and Management, "everyone who produces Hazardous and Toxic Material (B3) waste is obliged to manage the waste it produces". 32 of 2009 concerning the Protection and Management of the Environment State Gazette of the Republic of Indonesia Number 140," 2009) Law No. 36 of 2009 article 6 concerning health, states that "Every person has the right to a healthy environment to achieve a healthy state". Optimal health levels can only be achieved by carrying out health development using an early disease maintenance and prevention approach. handling medical waste in area-based health care facilities. (Regulation of the Minister of Health No. 18 of 2020 concerning Handling of Medical Waste in Regional-Based Health Service Facilities, 2020) Meanwhile in *das sein*, in practice there were still problems related to the management of medical B3 waste as previously explained.

To analyze the implementation of solid medical B3 waste management, the Theory of Legal Effectiveness was initiated by Soerjono Soekanto. Legal Effectiveness Theory can be interpreted that a success in achieving the goals or objectives set can be assessed based on the influencing factors, these factors are: (Soerjono Soekanto, 2008).

1. The legal factor itself
2. Law enforcement factors
3. Facility factor
4. Community factor
5. As a result of cultural factors, namely work, creativity, preferences based on human initiative in social life.

Apart from that, the Theory of Development Law is also used in relation to the supervisory process of related parties in the management of this solid medical waste.

With the problem of waste treatment, especially solid medical waste, especially during this pandemic, it is known that in dealing with these problems a system is needed that regulates and becomes a reference for achieving a standard of living and sustainable development. (Nilwansyah, 2022) Therefore the author is interested in conducting research more about

Juridical Analysis of the Effectiveness of Solid Medical Waste Management at Health Centers in Batam City.

## RESEARCH METHOD

The method used in this study uses empirical juridical methods. The empirical legal research method is based on realities in the field through observations at 3 (three) Community Health Centers in Batam City, namely the Sekupang Health Center, the Mentarau Health Center and the Sungai Langkai Health Center, which respectively are samples of the highest, medium and lowest total waste production within the Department Batam City Health. Samples were taken by purposive sampling method. The data used in this study are primary data through interviews and observations and based on secondary data consisting of:

1. Primary Legal Materials (“Law No. 32 of 2009 concerning the environment, Law No. 36 concerning health, Government Regulation of the Republic of Indonesia No. 22 of 2021 concerning the implementation of environmental protection and management, Regulation of the Minister of Health of the Republic of Indonesia (Permenkes RI) No. 18 of 2020 concerning Handling of medical waste in area-based health care facilities”).
2. Secondary Law Materials (research results, journal articles on law, textbooks, newspapers, magazines etc.).

## RESULTS AND DISCUSSION

### A. The effectiveness of waste management at Puskesmas in Batam City is reviewed from “UU No.32 of 2009 concerning Environmental Protection and Management”

As stated by Soerjono Soekanto to assess the effectiveness of a legal product, there are 5 factors that are used as benchmarks, namely:

#### 1. Legal Factors

Solid waste is separated into medical and non-medical waste as a result of health service activities. Medical waste tends to be infectious and toxic chemicals that can affect human health and worsen environmental sustainability if not managed properly. (Irawan et al., 2019)

Laws are legal products that provide justice, benefits and legal certainty. (Soerjono Soekanto, 2008) Furthermore, looking at Law No. 32 of 2009 concerning Environmental Protection and Management it has been regulated regarding waste. In general, the purpose of making government policies is to maintain public order in the country according to Sunggono.

Law No. 32 of 2009 concerning Environmental Protection and Management regulates waste. The content contained is that Indonesia's environment must be protected and managed properly based on the principles of state responsibility, the principle of sustainability, and the principle of justice. In addition, environmental management must be able to provide economic, social and cultural benefits which are carried out based on the principles of prudence, environmental democracy, decentralization, as well as recognition and respect for local wisdom and environmental wisdom. Environmental protection and management requires the development of an integrated system in the form of a national environmental protection and management policy that must be implemented in a consistent and consistent manner from the center to the regions.

The legal implication of the Environmental Protection and Management Law is that the law is used as a legal guideline/norm. Laws are used as a tool to order, maintain balance and trigger sustainable development.

This law does not explain in detail the mechanism/flow of medical waste management, but it has been accommodated by the RI Minister of Health No. 18 of 2020 concerning Disposal of medical waste in Area-Based Health Service Facilities regarding technical explanations in the field, so that the regulations rules regarding waste management have been regulated here to be carried out by related parties.

Based on the opinions of the respondents who are responsible for Environmental Health, the authors found that all respondents answered that they knew and applied the contents of Law No. 32 of 2009 concerning Environmental Protection and Management and knew and applied the contents of the RI Minister of Health No. 18 of 2020 concerning Disposal medical waste in Region-Based Health Service Facilities related to technical explanations in the field but not all of them have been fulfilled due to limited facilities and infrastructure. So based on the results of observations and interviews in these three puskesmas, the Law on Environmental Protection and Management as a guideline/legal norm related to waste management in puskesmas has not been implemented effectively.

## **2. Law Enforcement Factors**

Law enforcers are those who form and apply the law. In this case, law enforcers are not only limited to the police, prosecutors, judiciary, legal advisors and warden officers, but also include law enforcement agencies. The Health Office at both the city and provincial levels, the Environment Service as the supervisor of the implementation



of waste management in accordance with what is stated in the applicable laws and regulations of the minister of health.

Based on the results of interviews with respondents, there has been supervision from the Batam City Health Office and the Riau Islands Provincial Health Office and the Batam City Environment Service. However, the results of this monitoring are only a recommendation. Due to the constraints of not implementing management due to cost issues could not be resolved immediately.

Puskesmas in Batam city generally already have accredited certificates, in practice supervision/monitoring has been carried out by the Development Cluster Development Team from the Batam City Health Office in the form of quality control of puskesmas, one form of activity is by monitoring periodically against puskesmas designated as target areas. However, in reality the elements that are supervised are quite a lot, while the elements of waste management only occupy a small portion compared to the others. So that the monitoring efforts that have been carried out by the Health Service through the team are not optimal.

### **3. Facility and Infrastructure Factors (Facilities)**

Facilities or facilities that support law enforcement in the form of skilled/expert personnel who understand the problem of proper waste management, good organization, equipment, and adequate finances so that law enforcement can take place. From the results of interviews with respondents, all answered that there were limited facilities and infrastructure in waste management. Among other things, the availability of medical and non-medical waste bins, colored trash bags to distinguish the type of waste, safety boxes for solid medical waste that are sharp, TPS (Temporary Disposal Sites) that comply with standards, and related to the timely pickup of waste to be processed by the third. This limitation will affect the implementation of waste management in the three Community Health Centers.

Good facilities in the form of consumables and infrastructure in fulfilling the implementation of proper waste management also play an important role. Limitations in infrastructure greatly determine the process/stages of solid medical waste management can be carried out correctly. Several stages in carrying out waste management include:

- a. Separation:** Based on the results of interviews and observations in the field, the problem faced by segregating this waste is the availability of yellow trash bags that are often complained of by respondents. Not a priority in budgeting because of the



minimum budget for the puskesmas. Apart from that, the labeling of trash cans is also often missed from the budget, while the safety boxes from the three puskesmas studied have fulfilled the criteria because they have been provided and requests are submitted every year to the City Health Office.

- b. Temporary Shelter:** based on field observations, all the puskesmas studied already have TPS, it's just that most of them don't meet the requirements, and waste is sometimes transported longer than it should be due to limited funds.
- c. Transportation:** The means of transportation for transporting waste have fulfilled the criteria, all the puskesmas studied used the services of a third party in waste management. The carrier follows the transportation directions according to the transport summons from the health center. Because the costs incurred are not cheap, sometimes the puskesmas collects waste when funds are available or when the volume of waste collected is large enough.

If there are facilities and infrastructure that are not fulfilled, it will affect the effectiveness of the law regarding the waste management.

#### 4. Community Factors

An influential community is a group of individuals who are in an environment where the law applies or is applied. Law can take place as a provider of justice in society if it is accompanied by compliance and awareness in carrying it out. In this case, the community participates in the implementation of waste management, especially at the stage of separating the types of waste. From the results of interviews with respondents who conducted interviews, people who visited the Health Center, community involvement in solid waste management as waste disposal had not entirely carried out solid waste sorting according to its type where in fact there were still inappropriate placements when observing the waste.

Based on the results found in the field, the management of solid medical waste is carried out by environmental health officers and the initial process of processing, namely the waste segregation stage, is carried out by service unit officers, namely officers who use/perform activities that produce solid medical waste and patients who undergo medical procedures/services. . Most of the officers interviewed understood and carried out the proper segregation of solid medical waste. However, in contrast to the patients, most of the patients did not know what types of waste were put into the medical and non-medical waste bins. For example: leftover tissues wiping the mouths

of dental poly patients are thrown into non-medical trash cans, these tissues should be thrown into medical trash cans even though they don't use the medical equipment available at the puskesmas.

In addition to segregation problems, in the process of collecting solid medical waste, there are still cleaning workers who have not used standard personal protective equipment. At the waste collection stage, officers run the risk of being contaminated with medical waste if there is a patient's body fluid/tissue that is not properly accommodated.

## **5. Cultural Factors**

Cultural factors are also influential indicators, because these factors are closely related to those in society. Culture in proper management of medical waste needs to be implemented. In interviews with respondents, it was found that some of them thought that medical waste was only waste containing blood or the result of actions taken by health workers on patients, or that medical waste was only in the form of injection needles and other sharp objects. So that in reality there are still answers from respondents who have not been able to sort out the types of medical and non-medical waste, so that in fact in the field, waste is still found that is disposed of in inappropriate sorting places. A simple example: masks are still being thrown into non-medical waste bins.

Community culture is created from people's social patterns in everyday life, things that are done repeatedly will become habits and if they are preserved will create a culture. The assumption that is embedded in people's thinking is that it is said to be medical waste if the source is from patients who only undergo medical procedures. So that some types of waste produced are still missing and disposed of in the wrong place.

Based on the description of the various factors that influence the implementation of solid medical waste management above, the legal effectiveness of solid medical waste management in the three puskesmas is still not effective.

## **B. Solutions to obstacles in the implementation of solid medical waste management in Batam City**

The theory of Development Law still exists to color the existing legal theory in Indonesia, because it was created by native Indonesians with reference to the dimensions and culture of Indonesian society. Therefore, with the benchmarks of the dimensions of development law theory being born, growing and developing in accordance with Indonesian conditions, in essence when applied in its application it will be in accordance

with the conditions and situation of a pluralistic Indonesian society. In addition, in a dimensional sense, the Development Law Theory uses a frame of reference on the way of life of the Indonesian people and nation based on the Pancasila principle which is familial in nature, so that the norms, principles, institutions and rules contained in the "Development Law Theory are relatively dimensions which include structure, culture and substance as stated by Lawrence W. Friedman." as a system is indispensable for the Indonesian nation as a developing country. (Lili Rasjidi, 2012)

It is different from the opinion of Mochtar Kusumaatmadja, where he changed the notion of law as a tool to law as an instrument for community development. The basic ideas underlying this concept are that order and regularity in development and renewal efforts are desirable, even absolutely necessary, and that law in the sense of norms is expected to direct human activities in the direction desired by such development and renewal. In relation to the function of law that has been put forward, "Mochtar Kusumaatmadja provides a definition of law in a broader sense, not only as a whole of the principles and rules that govern human life in society, but also includes the institutions and processes that realizing the enactment of these principles in reality.

The following is a solution to the obstacles in the implementation of solid medical waste management at the Puskesmas in Batam City in relation to the factors that influence the implementation of the law based on the Theory of Legal Effectiveness:

### **1. Legal Factors**

According to the researcher, actually the existence of Law No. 32 of 2009 concerning Environmental Protection and Management regulating waste is quite good, along with standard operating procedures related to the management of solid medical waste in health centers as outlined in the Minister of Health Regulation as a derivative of the Law on Environmental Management. So that there is no need to change or revise these existing rules.

### **2. Law Enforcement Factors**

Enforcement is basically fully for efforts to uphold legal norms in a real way in society as a guideline of behavior in the life of society, nation and state in this case related to the management of solid medical waste. The enforcement process is expected to help implement the policies that have been set to achieve the goals that have been planned effectively and efficiently. Even with enforcement, an activity is created that is closely related to the determination or final result regarding the implementation of the business that has been carried out. In the early stages of law enforcement by law

enforcers, it can be done by tightening the licensing process from the Environmental Service regarding the management of solid medical waste, so that the Puskesmas can pay more attention and regard waste management as something that must be prioritized.

The need for increased supervision from the Batam City Health Service Assisted Cluster Quality Development Team as a form of continuous implementation of Puskesmas accreditation. Because so far, even though the Puskesmas has been accredited, the accreditation process has not necessarily made the Puskesmas' performance better in all respects including the management of this solid waste. So, by seeking optimal supervision from the Batam City Health Office through this team, medical waste management at the Health Center will be more effective.

The need for periodic supervision from the leadership of the Puskesmas on the executor / person in charge of environmental health related to the management of solid medical waste at the Puskesmas to ensure that the implementation of waste management is in accordance with existing regulations.

### **3. Facility and Infrastructure Factors (Facilities)**

There is a need to allocate substantial funds for spending plans in the coming year in terms of solid medical waste management, such as procuring trash bags and differentiating trash bags based on color to sort medical and non-medical waste, trash cans equipped with labels explaining what the waste is which may be put in the trash, safety boxes for storing/accommodating sharp medical waste, labels as information media, educational/socialization media, provision of personal protective equipment for waste collectors at the health center so that these officers are protected from danger/injury when collecting waste , fulfillment of Temporary Shelters (TPS) according to standards and operational permits as required by the Environmental Service, the process of transporting waste to third parties for further processing in accordance with statutory regulations as well as solid medical waste collection services for officers carrying out.

### **4. Community Factors**

The lack of socialization regarding the segregation of solid medical waste is an obstacle to the implementation of proper waste management. Supervision carried out by related parties is still limited to recommendations and cannot be followed up, becoming an obstacle in the implementation of proper waste management, as stated in the legal theory of development presented by Mochtar Kusumaatmadja, that in order to develop and continue to develop, a supervisory function is needed, using a pattern

of cooperation involving all parties so that the purpose of supervision can be achieved. (Lili Rasjidi, 2012) Supervision should start from the party responsible for environmental health by conducting regular waste checks in each service unit that produces solid medical waste, the monitoring results are analyzed, the results of the analysis are continued to the Head of the Health Center to assess whether it needs to be followed up if something is not in accordance with applicable regulations. The next level of supervision is carried out by the Health Service as in charge of the Puskesmas should be able to provide input or consideration and urge the provision of facilities and infrastructure as we know that to support legal effectiveness, strong infrastructure and supervision are needed to achieve the expected goals. As well as increasing the capacity of officers who are responsible for managing solid medical waste at the puskesmas.

##### **5. Cultural Factors**

Changing a culture is not easy, but not impossible. The need for community outreach and education about the importance of proper waste management and what are the impacts resulting from incorrect waste handling can raise public awareness and carry out waste management according to their respective roles. Routine inspection and monitoring can reduce problems to pile up and quickly get effective solutions. So that the supervisory role that requires community support can be fulfilled in accordance with the theory of legal effectiveness.

## **Conclusion**

Based on the results obtained from the data analysis and discussion, it can be concluded from the results of this study that the waste management at the Puskesmas in Batam City has not been implemented effectively. Various obstacles/obstacles faced, especially supervision, starting from the issuance of operational permits and supervision during health service activities from related agencies, the availability of inadequate facilities and infrastructure, and the lack of understanding of the community in terms of sorting waste are the influencing factors.

The solution to the obstacles/obstacles faced by Puskesmas in Batam City related to waste management is the need to tighten the licensing process at the beginning of the permit process by the Environmental Service. The need for increased supervision in stages and periodically. The need for more real law enforcement, such as imposing sanctions on those who commit violations. The need to prioritize the allocation of funds to complement the needs of facilities and infrastructure according to existing standards. Conduct socialization to the community, especially in the puskesmas environment so that they have an understanding of solid medical

waste. To increase the capacity of officers who are responsible for managing solid medical waste at the puskesmas.

### **Bibliography**

- Amin, Muhammad, Qariati, Nurul Indah, & Jalpi, Agus. (2011). PENDAHULUAN Puskesmas merupakan salah satu unit pelayanan kesehatan yang dalam kegiatannya menghasilkan limbah medis maupun non medis baik dalam bentuk padat maupun cair . Limbahmedis adalah semua bahan limbah yang diciptakan di fasilitas pelayanan kese. Repository UNISKA.
- Aris. (2019, July). Ngeri.. Limbah Medis Berserakan di Kota Batam. Batampos.Co.Id.
- Buana, Ridhani Surya. (2021). Aspek Hukum Pengelolaan Limbah Bahan Berbahaya Dan Beracun (B3) Di Rumah Sakit Umum Daerah Balangan. *Dinamika*, 27(10), 1387–1405.
- Cahyandari, Alifiah Tri Setya, & Pradana, Galih Wahyu. (2022). Peran Pemerintah Daerah Dalam Pelaksanaan Urusan Wajib Lingkungan Hidup (Studi Upaya Pengelolaan Limbah B3 Di Kabupaten Sidoarjo). *Publika*, 10(1), 159–174.
- Dany Garjito, Chyntia SAmi Bhayangkara. (2021, August). Viral Limbah Medis Bekas Jarum Suntik Berserakan di Kota Bekasi. *Suara.Com*.
- Fadilla, Rayhan Hafiz. (2021). Implementasi Pengelolaan Limbah Infeksius Yang Berasal Dari Rumah Sakit Pada Masa Pandemi Covid-19 Di Kota Bandung Berdasarkan Peraturan Pemerintah Nomor 101 Tahun 2014 Tentang Pengelolaan Limbah Bahan Berbahaya Dan Beracun Dan Penegakkan Hukum. *Syiar Hukum : Jurnal Ilmu Hukum*, 19(2), 133–148. <https://doi.org/10.29313/shjih.v19i2.8960>
- Hendra Cipta, & Khairina. (2021, October). Jarum Suntik dan Ratusan Botol Limbah Medis Dibuang Berserakan di Selokan. *Kompas.Com*.
- Irawan, Muhammad Agus, Handoyono, Susilo, & Aprina, Elsa. (2019). Analisis Yuridis tentang Pengelolaan Limbah Medis Padat di Unit Pelaksana Teknis Puskesmas Babulu Kabupaten Penajam Paser Utara. *Lex Suprema*, 1(September), 1–18.
- Lili Rasjidi, Ida Bagus Wyasa Putra. (2012). *Hukum Sebagai Suatu Sistem*. Jakarta: fikahati Aneska.
- Madi Irawan. (2017). *Tanggung Jawab RS dalam Pengelolaan Limbah Berbahaya dan beracun*. Hasanuddin.
- Marta, Stefanus Doni. (2018). *Pengelolaan Limbah Medis Padat Sebagai Bentuk Tanggung Jawab Dan Perlindungan Hukum Dalam Pengelolaan Limbah Bahan Berbahaya Dan Beracun*. SOEGIJAPRANATA Semarang.

- Mirawati, Budiman, & Tasya, Zhanaz. (2019). Analisis Sistim Pengelolaan Limbah Medis Padat di Puskesmas Pangi Kabupaten Parigi Moutong. *Jurnal Kolaboratif Sains*, 1(1), 1–8.
- Nilwansyah, Fahmi. (2022). Identifikasi Sustainable Development Goals Dalam Pencegahan Penanggulangan Limbah Medis Covid-19 Dan Regulasi Perda Bandar Lampung Nomor 05 Tahun 2015. *LITRA: Jurnal Hukum Lingkungan, Tata Ruang, Dan Agraria*, 1(2), 171–184. <https://doi.org/10.23920/litra.v1i2.588>
- Peraturan Menteri Kesehatan No.18 Tahun 2020 Tentang Penanganan Limbah Medis Fasilitas Pelayanan Kesehatan Berbasis Wilayah. (2020).
- Peraturan Menteri Kesehatan No 43 Tahun 2019. (2019).
- RR Lyia Aina Prihardiati. (2021). TEORI HUKUM PEMBANGUNAN ANTARA DAS SEIN DAN DAS SOLLEN. *HERMENEUTIKA*, 5(1). <https://doi.org/10.33603/hermeneutika.v3i2>
- Ruli Satriadi. (2021, May). Rumah Sakit Gandeng PPLI Tangani Limbah Medis. *Berita Satu*.
- Soemantri, Yondia Vanensashakeh. (2017). Lingkungan Hidup (Studi Dumping Limbah Tanpa Izin Terkait dan Berdasarkan Putusan Nomor 61/PID.SUS/2015/PN/UNR.JO.Nomor 162/PID.SUS/2016/PT.SMG. *Diponegoro Law Jurnal*, 6(2), 2.
- Soerjono Soekanto. (2008). *Faktor-Faktor yang Mempengaruhi Penegakan Hukum*. Jakarta: PT.Raja Grafindo Persada.
- Undang-Undang Dasar Republik Indonesia Tahun 1945 (Pasal 28 H,1 dan 2). (n.d.).
- UU No. 32 Tahun 2009 Tentang Pelindungan dan Pengelolaan Lingkungan Hidup. Lembaran Negara Republik Indonesia Nomor 140. (2009).
- UU No.36 Tahun 2009 Tentang Kesehatan. Lembaran Negara Republik Indonesia No.1441. (2009).
- Yustina, Endang Wahyati. (2021). Aspek Hukum Pengelolaan Limbah Medis Pada Fasilitas Pelayanan Kesehatan Dan Perlindungan Terhadap Kesehatan Lingkungan. *Jurnal Paradigma Hukum Pembangunan*, 6(1), 98–115. <https://doi.org/10.25170/paradigma.v6i1.2585>.