

## Analysis of the Conformity of Waste Management and Monitoring of Padang Bulan Health Center in Accordance with Applicable Environmental Regulations

Susilawati \*, Ipak Sinantin, Khalisa Aisyah Signora, Kurnia Permata Sari, Ridho Afdal Marunduri,  
Rianda Fadila Nasution, Rosida Sapriani Harahap

Fakultas Kesehatan Masyarakat, Universitas Islam Negeri Sumatera Utara  
Jl. William Iskandar Ps. V, Medan Estate, Deli Serdang, 20371, Indonesia

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### ABSTRACT

Good medical waste management is an important part of ensuring public health and environmental sustainability in health care facilities. This study aims to analyze the suitability of medical waste management and monitoring at Padang Bulan Health Center based on applicable environmental regulations. The method used is a descriptive survey with a qualitative approach through observation, checklists, documentation, and interviews in May 2025. The types of waste analyzed include liquid waste, non-B3 solid waste, and B3 waste. Based on the results of the study, the management of non-B3 solid waste and B3 waste has been in accordance with standards, indicated by the existence of routine sorting, storage, and transportation by third parties. However, the management of liquid waste is not yet in accordance because the wastewater treatment plant (IPAL) is damaged and does not function optimally, and monitoring has not been carried out on a scheduled basis. In terms of facilities and infrastructure, the health center has met the basic environmental criteria. The results of this study are expected to be the basis for evaluation for improving the waste management system, especially in the aspect of liquid waste, in order to create a safe and healthy environment.

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### Corresponding Author:

Susilawati  
Universitas Islam Negeri Sumatera Utara  
Email: [susilawati@uinsu.ac.id](mailto:susilawati@uinsu.ac.id)

## INTRODUCTION

Health centers as the spearhead of health services are a supporter of the successful implementation of the national health program in Indonesia. Health centers are at the basic level in health organizations where health workers work together to achieve health development goals (Endang, 2021). Health service facilities, such as health centers, have the potential to produce toxic and hazardous waste (B3). Health service waste is the final waste from the activities of health agencies, health service facilities and laboratories. Hazardous and toxic materials (B3) are substances that have properties, concentrations and quantities, either directly or indirectly that can pollute or endanger the environment and human health or other living things. B3 waste is the residue of an activity that contains B3. Medical waste is all waste generated from medical activities that can be in solid, liquid or gas form. While solid medical waste is a type of waste that has a solid form (Winda et al, 2021).

Management of medical waste in health service facilities, including health centers, is an important aspect in maintaining public health and environmental sustainability. Medical waste, especially those classified as Hazardous and Toxic Waste (B3), has great potential to pollute the environment and pose serious health risks if not managed properly. Therefore, medical waste management must be carried out systematically and in accordance with applicable regulations to minimize the risk of pollution and disease transmission (Ulul, 2025).

In Indonesia, medical waste management is regulated in several regulations, including the Regulation of the Minister of Health Number 18 of 2020 concerning Management of Medical Waste from Regional-Based Health Service Facilities which regulates the obligations of health facilities in managing medical waste in an integrated and sustainable manner (PermenLH, 2020). In addition, Government Regulation Number 22 of 2021 concerning the Implementation of Environmental Protection and Management and Regulation of the Minister of Environment and Forestry Number 6 of 2021 regulate the procedures and requirements for B3 waste management, including sampling, characteristic testing, and further management of B3 waste technically and administratively (PermenLH, 2021).

Padang Bulan Health Center as one of the primary health care facilities is required to implement medical waste management in accordance with these provisions. The implementation of this regulation involves various aspects such as internal communication, provision of facilities and infrastructure (eg safety boxes, plastic-lined trash bins), environmental sanitation personnel, implementation of Standard Operating Procedures (SOP), and routine waste recording and reporting (Debataraha & Romi, 2023). Compliance with this regulation is not only important to fulfill legal obligations, but also to protect the environment and the health of the surrounding community from the negative impacts of medical waste (Yeni & Rizka, 2025).

However, in practice, medical waste management at the Health Center often faces obstacles such as waste accumulation, inconsistency of officer roles, and limited adequate facilities and infrastructure (Endy, 2024). This indicates the need for an in-depth analysis of the suitability of waste management and monitoring at the Padang Bulan Health Center in order to ensure effective implementation and in accordance with applicable regulations.

With this background, the analysis of the suitability of waste management and monitoring at the Padang Bulan Health Center is very important to identify the level of compliance with regulations, reveal the obstacles faced, and provide recommendations for improvement in order to achieve safe, effective, and sustainable medical waste management.

## METHOD

This study uses a descriptive survey method that aims to identify and analyze the potential environmental impacts due to the operation of the Health Center. The study was conducted in May 2025 at the Padang Bulan Health Center, Medan Baru District, Medan City. The variables consist of independent variables (management of liquid, solid non-B3, and B3 waste), dependent variables (environmental impacts such as pollution and health problems), and intermediate variables (management efforts and waste). Data were collected through direct observation, assessment checklists, and visual documentation. The analysis was carried out descriptively qualitatively by comparing the findings with applicable environmental management standards.

## RESULTS

This study identifies the condition of waste management at Padang Bulan Health Center which includes liquid waste, non-B3 solid waste, and B3 waste, as well as supporting aspects in the form of facilities and infrastructure. Direct observation and filling out of checklists were carried out on three categories of waste, namely liquid waste, non-B3 solid waste, and B3 waste. The findings were then compared with relevant regulatory standards, such as PP No. 101 of 2014 concerning B3 Waste Management and Permenkes No. 18 of 2020

**Table 1. Aspects assessed at Padang Bulan Health Center**

| Types of Waste            | Aspects Assessed                                             | Observation Results at Health Centers                                               | Standard Regulations                                                                           | Compliance                           |
|---------------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------|
| <b>Liquid Waste</b>       | There is a wastewater treatment plant & processing frequency | There is a wastewater treatment plant, but it is damaged, management is not routine | There must be a functioning wastewater treatment plant (Minister of Health Regulation 18/2020) | Not yet in accordance                |
| <b>Liquid Waste</b>       | Monitoring the quality of liquid waste                       | Conducted but not scheduled                                                         | Must be done routinely, at least monthly (PP 101/2014)                                         | Not yet in accordance                |
| <b>Non-B3 Solid Waste</b> | Sorting and transportation                                   | Already sorted & transported every day                                              | Must be done every day (Minister of Health Regulation 18/2020)                                 | In accordance                        |
| <b>Non-B3 Solid Waste</b> | Closed TPS & monitoring                                      | TPS exists, closed, monitored daily                                                 | TPS must be closed and monitored periodically                                                  | In accordance                        |
| <b>B3 waste</b>           | Sorting and storage at B3 TPS                                | Already sorted, stored at special B3 TPS                                            | There must be sorting & storage (Minister of Health Regulation 18/2020)                        | In accordance                        |
| <b>B3 Waste</b>           | Transportation and monitoring frequency                      | Monthly transportation by PT SDLi, monthly monitoring                               | Minimum monthly monitoring, transportation according to schedule (PP 101/2014))                | Sesuai ( <i>perlu ditingkatkan</i> ) |

#### 1. Liquid Waste Assessment

Based on the results of observations, Padang Bulan Health Center produces liquid waste from various sources such as toilets, bathrooms, and treatment rooms. The liquid waste is channeled into a septic tank. However, none of the staff or technical officers know the location of the septic tank. This indicates a weak documentation system and maintenance of sanitation infrastructure in the health facility.

Padang Bulan Health Center has been equipped with a wastewater treatment plant (IPAL), however, based on the results of observations and interviews with officers, it is known that the IPAL is not functioning optimally. Several technical components are damaged, such as clogged drains and sedimentation tanks so that they are unable to work optimally due to the lack of regular maintenance. The health center collaborates with a third party, namely PT. Sumatera Deli Lestari Indah (SDLi), for the processing process.

#### 2. Non-B3 Solid Waste Assessment

In the management of non-B3 solid waste, the main sources come from the waiting room, bathroom, building cleaning activities, and administrative activities. Based on the results of observations that have been carried out, there is a separation of organic and inorganic waste so that the suitability of organic and inorganic waste bins has been seen. Padang Bulan Health Center has a TPS located behind the health center which is tightly closed so as not to cause odor or spread of disease. Solid waste management is carried out by sorting, routine transportation by officers, and utilization of recycling by third parties. This management is carried out every day, and monitoring is carried out from the source to the transportation process to ensure that management is running according to standards.

#### 3. Assessment of B3 Waste

Meanwhile, the B3 waste produced by the health center comes from infectious medical waste such as bandages, used cotton, injection needles, and chemical waste such as disinfectants and cleaners. Based on the results of observations, there are several points of special B3 waste bins labeled red, especially service rooms and areas near the IPAL. Based on the results of the interview, medical waste has been sorted according to type, one of which, such as inspection, is stored in a red box and will then be sent by third party transportation. B3 waste management is carried out by sorting according to type, temporary storage at the B3 waste TPS, and transportation by PT. SDLi on a monthly basis.

#### 4. Facilities and Infrastructure

Based on the results of observations in terms of facilities and infrastructure, the health center has met the basic criteria such as sturdy and safe building conditions, adequate ventilation, properly functioning windows, and maintained cleanliness of floors and walls. In addition, the health center has a proper source of clean water, water quality that meets quality standards, and carries out regular water checks and cleaning. There are also no smoking signs in the health center area as part of internal environmental control.

## CONCLUSION

Padang Bulan Health Center has managed medical waste, liquid waste, and non-B3 solid waste quite well. They have a liquid waste treatment plant (IPAL) and work with third parties for waste management. Solid waste management is carried out every day, and B3 waste is handled specifically and regularly. The health center facilities and infrastructure are also adequate and support environmental cleanliness and health. However, monitoring of liquid and B3 waste still needs to be increased in frequency to be more optimal and prevent environmental pollution and the IPAL facility is also not functioning optimally, which is caused by technical damage and minimal routine maintenance, so that it is unable to support an effective waste management system. Overall, Padang Bulan Health Center has made quite good environmental management and monitoring efforts, especially in the management of solid and B3 waste. However, improvements are still needed in terms of scheduling liquid waste monitoring and more routine waste transportation to ensure that there is no accumulation and greater risk of pollution. Strengthening documentation and periodic evaluation is also recommended to ensure that the waste management system runs optimally and sustainably. And also the weaknesses in the safety and environmental cleanliness aspects indicate the need for increased supervision and commitment in the management of safe and standardized health facilities.

## REFERENCES

- [1] Adam, S., Hukum, J., Sosial, D. A. N., Regulasi, A., Limbah, P., & Di, B. (2022). Analisa Regulasi Pengelolaan Limbah B3 Di Puskesmas Pembantu Daerah 3t: Bebas Pengalangan. Jurnal Hukum Dan Sosial, Vol. 2 No., Page 228 – 236.
- [2] Ardianto, A., Rosdiana, R., & Ndibale, W. (2021). Analisis Sistem Pengelolaan Limbah Medis Padat Pada Puskesmas Onembute Kecamatan Onembute Kabupaten Konawe. Jurnal Teluk: Teknik Lingkungan Um Kendari, 1(2), 11–18. <https://doi.org/10.51454/Teluk.V1i2.50>
- [3] Arisma Nova. (2021). Gambaran Pengelolaan Limbah Medis Padat Di Rumah Sakit Hi Muhammad Yusuf Kalibangan Kotabumi Tahun 2019. Jurnal Kesehatan Lingkungan Ruwa Jurai. Vol15.No2.Hal85-91 <https://ejurnal.poltekktjk.ac.id/index.php/JKESLING/article/view/Nova%20Arisma1382>
- [4] Astiwaru, Endy Muhammad. (2024). Evaluasi Kebijakan Pengelolaan Limbah Medis Dalam Perspektif Syariah. Indonesian Journal Of Studies On Humanities Social Science, And Education (IJHSED).1(3). 70-87
- [5] Azmi Ulul. (2024). Optimalisasi Pengelolaan Limbah Medis Padat Di RSUD Teungku Peukan Aceh Barat Daya
- [6] Debataraza, Romi I C. (2023). Implementasi Peraturan Menteri Kesehatan Nomor 18 Tahun 2020 Tentang Pengelolaan Limbah Medis Fasilitas Pelayanan Kesehatan Berbasis Wilayah Pada Puskesmas Padang Bulan Medan. <https://repositori.uma.ac.id/jspui/bitstream/123456789/20261/1/211801027%20-%20Romi%20Indra%20Cahaya%20Debataraja%20-%20Fulltext.pdf>
- [7] Gito Sugianto Dkk., (2021). Analisis Mengenai Dampak Lingkungan (Amdal), Padang; Pt,Global Eksekutif Teknologi
- [8] Gulo Alberriesta, dkk. (2021). Analisis Faktor Risiko Kejadian Penyakit Tuberkulosis Paru Di Wilayah Kerja Upt Puskesmas Padang Bulan Kota Medan Tahun 2020. Journal of Healthcare Technology and Medicine Vol. 7. No1.Hal 128-137 <https://jurnal.uui.ac.id/index.php/JHTM/article/view/1367>
- [9] Hidayah, Farida Nur. (2023). Perkembangan Pengaturan Hukum Limbah Bahan Berbahaya Dan Beracun (Limbah B3) Di Indonesia. Jurnal Indonesia Sosial Teknologi. Vol(4). No(2).Hal (211). [https://openurl.ebsco.com/EPDB%3Aged%3A14%3A24513102/detailv2?sid26=ebsco%3Aplink%3Ascholar&id=ebsco%3Aged%3A162783152&crl=c&link\\_origin=scholar.google.com](https://openurl.ebsco.com/EPDB%3Aged%3A14%3A24513102/detailv2?sid26=ebsco%3Aplink%3Ascholar&id=ebsco%3Aged%3A162783152&crl=c&link_origin=scholar.google.com)
- [10] Implementasi, A., Fisik, A., Health, B., Primasari, S. I., Listina, F., Adam, S., Hukum, J., Sosial, D. A. N., Regulasi, A., Limbah, P., Di, B., Rahno, D., Roebijoso, J., Leksono, A. S., Pasai, E., Pengelolaan, B., Damanik, E. M., Man, S., Niha, S. S., ... Musmini, L. S. (2023). Analisis Pengelolaan Limbah Medis Padat Di Puskesmas Kota Jambi. 2(2), 24–30. <https://doi.org/10.32897/jiim.2023.2.1.262>
- [11] Indasah., (2020). Analisis Mengenai Dampak Lingkungan (Amdal). (N.P.): Deepublish
- [12] Jamil, N. M., Handayani, A. T. W., & Koesoemawati, D. J. (2024). Strategi Administrasi Dan Lingkungan Pengelolaan Limbah Medis Berdasarkan Kinerja Petugas Di Puskesmas Kabupaten Jember. Jurnal Kesehatan Lingkungan Indonesia, 23(1), 41–49. <https://doi.org/10.14710/jkli.23.1.41-49>
- [13] Kemenkes., (2025). Pedoman Kajian Aspek Kesehatan Masyarakat Dalam Amdal. (N.P.): Michosan Center Indonesia
- [14] Kristianti Winda, dkk.(2021). Pengelolaan Limbah Bahan Berbahaya (B3) Medis Padat. Higea Journal Of Public Health Research And Development. 5(3). 426-440 [https://scholar.google.com/scholar?hl=id&as\\_sdt=0%2C5&q=Fasilitas+Pelayanan+Kesehatan%2C+seperti+Puskesmas+memiliki+potensi+penghasil+limbah+bahan+beracun+dan+berbahaya+%28B3%29.+&btnG=#d=gs\\_qabs&t=1750178627304&u=%23p%3DuHMBx2dSTv8J](https://scholar.google.com/scholar?hl=id&as_sdt=0%2C5&q=Fasilitas+Pelayanan+Kesehatan%2C+seperti+Puskesmas+memiliki+potensi+penghasil+limbah+bahan+beracun+dan+berbahaya+%28B3%29.+&btnG=#d=gs_qabs&t=1750178627304&u=%23p%3DuHMBx2dSTv8J)
- [15] Mansyur Zulkifli, Andi Yusuf & Muhammad Rifai. (2021). Analisis Faktor Yang Mempengaruhi Kinerja Pegawai Puskesmas. Jurnal Ilmiah Kesehatan Sandi Husada. Vol(10.No(2).Hal 575-584. <https://jurnalsandihusada.polsaka.ac.id/jiksh/Article/View/657/438>
- [16] Menteri Lingkungan Hidup Dan Kehutanan Republik Indonesia.(2021). Peraturan Menteri Lingkungan Hidup Dan Kehutanan Republik Indonesia Nomor 6 Tahun 2021 Tentang Tata Cara Dan Persyaratan Pengelolaan Limbah Bahan Berbahaya Dan Beracun
- [17] Ngurah, A. A. A., Saraswati, P., & Musmini, L. S. (2024). Analisis Penerapan Akuntansi Lingkungan Terhadap Pengelolaan Limbah Sebagai Bentuk Pertanggungjawaban Sosial Pada Puskesmas Kubutambahan I. Jurnal Ilmiah Akuntansi Dan Humanika,

- 14(2), 179–189.
- [18] Nuwa, Y. C. A. G. (2023). Analisis Penerapan Akuntansi Lingkungan Atas Pengelolaan Limbah Pada Dinas Kesehatan Kota Kupang. *Jurnal Akuntansi: Transparansi Dan Akuntabilitas*, 11(1), 27
- [19] Pariani, L., Sjah, T., Sarjan, M., Magister, P., Sumber, P., Alam, D., & Mataram, U. (2024). Analisis Efektivitas Instalasi Pengolahan Air Limbah Dan Penilaian Masyarakat Terhadap Pengolahan Limbah Cair Puskesmas Bonjeruk Setiap Puskesmas Wajib Melaksanakan Penyelenggaraan Pelayanan Kesehatan. 4(3), 155–160.
- [20] Permenkes RI. (2020). Peraturan Menteri Kesehatan Republik Indonesia Nomor 18 Tahun 2020 Tentang Pengelolaan Limbah Medis Fasilitas Pelayanan Kesehatan Berbasis Wilayah
- [21] Presilawati F, Ali A & Andi F. (2022). Pengaruh Kepemimpinan, Lingkungan Kerja Non Fisik Dan Kompensasi Terhadap Kinerja Pegawai Puskesmas Beutong Kabupaten Nagan Raya Aceh. *Jurnal Ekombis Riview - Jurnal Ilmiah Ekonomi Dan Bisnis*. (3).(1). Hal 439-454. <https://Jurnal.Unived.Ac.Id/Index.Php/Er/Article/View/2046/1626>
- [22] Rahno, D., Roebijoso, J., & Leksono, A. S. (2023). Pengelolaan Limbah Medis Padat Di Puskesmas Borong Kabupaten Manggarai Timur Propinsi Nusa Tenggara Timur. 6(1), 22–32.
- [23] Ratnasari Yeni & Rizka. (2025). Penegakan Hukum Terhadap Pengelolaan Bahan Bahaya Dan Beracun (Limbah B3) Di RSGM Soelastrri Kota Surakarta  
[https://scholar.google.com/scholar?hl=id&as\\_sdt=0%2C5&as\\_ylo=2021&q=Kepatuhan+terhadap+regulasi+ini+tidak+hanya+penting+untuk+memenuhi+kewajiban+hukum%2C+tetapi+juga+untuk+melindungi+lingkungan+dan+kesehatan+masyarakat+sekitar+dari+dampak+negatif+limbah+medis&btnG=#d=gs\\_qabs&t=1750179800116&u=%23p%3D9xsNk5DPiV4J](https://scholar.google.com/scholar?hl=id&as_sdt=0%2C5&as_ylo=2021&q=Kepatuhan+terhadap+regulasi+ini+tidak+hanya+penting+untuk+memenuhi+kewajiban+hukum%2C+tetapi+juga+untuk+melindungi+lingkungan+dan+kesehatan+masyarakat+sekitar+dari+dampak+negatif+limbah+medis&btnG=#d=gs_qabs&t=1750179800116&u=%23p%3D9xsNk5DPiV4J)
- [24] Rusdiana, D., Tati, M. P. A., & Nugraha, S. (2021). Identifikasi Pelanggaran Amdal Mega Proyek Wisata Pulau Komodo Nusa Tenggara Timur. *Jurnal Identitas*, 1(1), 42-52.
- [25] Suafisa Haydi,dkk.(2025).Menggali Manfaat dan Kekurangan JKN: Peningkatan Layanan Kesehatan di Padang Bulan, Medan. *Jurnal Administrasi Pemerintahan Desa*. Vol (06).No (01).Hal (1-9) <https://villages.pubmedia.id/index.php/villages/index>
- [26] Sulaeman, Endang Sutisna.(2021). Manajemen Kesehatan Teori Dan Praktik Di Puskesmas. *Diglib.Uns.Ac.Id* [https://scholar.google.com/scholar?hl=id&as\\_sdt=0%2C5&q=Puskesmas+sebagai+ujung+tombak+pelayanan+kesehatan+merupakan+penunjang+keberhasilan+pelaksanaan+program+kesehatan+nasional+di+Indonesia.+Puskesmas+berada+pada+tingkat+dasar+dalam+organisasi+kesehatan+dimana+tenaga+kesehatan+bekerja+sama+untuk+mencapai+tujuan+pembangunan+kesehatan.&btnG=#d=gs\\_qabs&t=1750178374182&u=%23p%3DrSZMNUL5nI0J](https://scholar.google.com/scholar?hl=id&as_sdt=0%2C5&q=Puskesmas+sebagai+ujung+tombak+pelayanan+kesehatan+merupakan+penunjang+keberhasilan+pelaksanaan+program+kesehatan+nasional+di+Indonesia.+Puskesmas+berada+pada+tingkat+dasar+dalam+organisasi+kesehatan+dimana+tenaga+kesehatan+bekerja+sama+untuk+mencapai+tujuan+pembangunan+kesehatan.&btnG=#d=gs_qabs&t=1750178374182&u=%23p%3DrSZMNUL5nI0J)
- [27] Sumiarsih, S., & Rasniah Sarumi. (2021). Penyuluhan Dampak Limbah Masker Bekas Pakai (Medis Dan Non Medis) Terhadap Lingkungan Dan Kesehatan Masyarakat. *Promotif : Jurnal Kesehatan Masyarakat*, 11(2), 122–129. <https://doi.org/10.56338/Pjkm.V11i2.2036>
- [28] Vina Amalia Rifanti, A. P. F. (2024). Analisis Penerapan Akuntansi Lingkungan Terhadap Wuluan Jember Vina Amalia Rifanti, Ana Pratiwi E \_ Investa : *Jurnal Rumpun Ilmu Ekonomi Dan Bisnis Islam Introduction ( First Heading ) Kesehatan Merupakan Kekayaan Bagi Manusia , Kesehatan Jiwa Dan Fisik. Jurnal Rumpun Ilmu Ekonomi Dan Bisnis Islam*, 106–118. 28
- [29] Yanto, E. (2020). Analisis Sistem Pengelolaan Limbah Medis Padat Puskesmas Di Kabupaten Tanjung Jabung Barat (Studi Kasus Di Puskesmas Rawat Inap Purwodadi Kec. Tebing Tinggi Kab.Tanjung Jabung Barat). *Jurnal Pembangunan Berkelanjutan*, 3(2), 32–39.