



Identification of Waste Composition and Generation Activities of Doctor Practices (Studied in House Karees)

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Abstract: This study was conducted on the Bandung municipality Karees to determine the composition and medical waste generated from physicians who practice at home. The number of doctors who practice in the region are as much as 242 Karees doctor. The method used is the method of sampling. From the number of practicing physicians, who represent is as much as 15% of the total, ie 36 physicians. The results showed that out of 36 doctors, an average of waste generated is as many as 53.428 kg / day. Of the average of the generation, the average medical waste generated is as much as 5.821 kg / day and the average non-medical garbage as much as 47.607 kg / day. So it can be a percentage of the average medical waste amounted to 10.9%, while the average non-medical garbage of 89.1%. Other than that, The average volume of waste generated at 402.3 liters / day. By knowing that in society there are medical waste that is not managed properly, it is expected that the planning of medical waste in accordance with applicable procedures.

Keywords: Generation, medical waste, non-medical trash.

I. INTRODUCTION

Development field problems environmental health rapidly accelerating pace with technological developments. Environmental degradation is the impact of technological development and industrialization.

The quality of environmental health issues increasingly diverse content and scope requires serious handling systems and more specific. Medical waste is a product which is derived from the activities performed by a doctor who can dangerous other humans if not treated specially. Medical waste (medical wastes) is the waste arising from the examination, diagnosis and therapy. Based on the potential dangers inherent in the medical waste, the types of waste can be classified into sharps, infectious, body tissue, pharmacy; and others, Damanhuri, E., [1],

Sharps waste may be contaminated by blood, body fluids, materials microbiology, toxins, cytotoxic or radioactive. Sharps waste has the potential additional hazards that can lead to infection or injury because they contain toxic chemicals or radioactive potential for disease transmission would be very high if the object had been used for the treatment of patients with infectious disease.

Infectious waste includes the following definitions:

- Waste associated with patients who require isolation of infectious diseases (intensive care).
- Laboratory wastes associated with microbiology inspection of the clinic and the treatment room or isolation of infectious diseases.

Body tissue covering organs, limbs, blood and body fluids are usually produced at surgery or autopsy. trashpharmacy came from :

- Expired drugs
- Drugs that are wasted because not meet specifications or contaminated packaging.
- The drugs returned by patients or wasted by the public.
- The drugs are no longer needed by the institution concerned.
- Waste generated during the production of medicines, Health Academy L, [2].

With this study will evaluate the presence or absence of medical waste that is not managed properly in the environment society.

II. GENERAL DESCRIPTION

In this research area that will serve as a case study is Karees region, it is based on several considerations, among others:

- a. Karees region is a region which has the second highest number of doctors who practice at home after Cibeunying region.
- b. Karees region is a region which has the most complete home practice physician category when compared with other regions.

According to geographical location Karees region located at coordinates 105 ° 43 'East Longitude and 6o 00' -6o 20 'South Latitude. In administration Karees region located in Level II Regional Municipality Bandung. Have an area of 2070.63 hectares with following boundaries:

- North: District wells Bandung
- South: District of Margacinta
- West: District of Astanaanyar
- East: District of Cicadas

Karees region is a plateau at an altitude of 800 meters above sea level.

Climatic conditions generally tergalong tropical climate, with temperatures ranging between (19-29) oC. With an annual rainfall average between (2190 - 5120) mm.

In general land use Karees region is used for:

- Settlement
- office complex
- shopping complex
- Public services, etc.

The population of the Territory Karees has reached 358 720 people, consisting of 74 147 households. The area is divided into four districts, namely:

- a. Subdistrict Kiaracondon
- b. Subdistrict Batununggal
- c. Subdistrict Lengkong; and
- d. Subdistrict Regol.

The number of residents Karees region can be seen in Table 1 below:

Table 1. Population in Wilavah Karees

Sub-district	Kapala Family	Population (People)		
		Man	woman	total
Kiaracandong	21 370	53 250	49680	102930
Batununggal	25 860	55 711	55 534	111 245
Lengkong	11511	36 258	35 241	71 499
Regol	15 494	35 846	37 200	73046
Total	74147	181 065	177 655	358 720

Source: Summary of Data Monograph districts, [3]

Type livelihoods Karees region is very diverse, but most are entrepreneurs, employees, both public servants and private employees. Economically and income level then this wllayah population including the middle class.

Additional activities are generally conducted population was trading with kiosks. In addition there is also conducting two kinds of jobs to supplement the family income.

Health is a very important human need that is not less important than other needs, because we can not do anything if the activities of impaired health.

In Area Karees health services have been adequate, it can be seen in Table 2.

Table 2 Data Health Services in Region Karees

No.	Health services	Total
1	Hospital	5
2	Maternity Hospital	5
3	Polyclinic	3
4	PHC	12
5	Physician Practice	242

Source: [3].

Of the four districts, there are as many as 242 physicians practicing physicians. All of that is the total number of categories of physicians practicing at home vang contained in Karees region. The categories are:

- General Practitioners (154)
- Dentist (63)
- Specialist Doctors Dermatology (1)
- Surgery Specialists (3)
- Pediatrician (8)
- Specialist Doctors (2)
- ENT Specialist Doctor (1)
- Specialist Doctors Obsetric and Ginekulogi (3)
- Neural Specialist Doctor (1)
- Ophthalmologist (3)
- Specialist Physician Life (2).

III. METHODOLOGY

Collection of secondary data for the purposes of examination of medical waste generated comes from Municipal Health Office Jakarta. Analysis garbage is largely done at the Department of Environmental Laboratory Environmental of Kalbe Institute of Technology and Business.

Introduction is made to:

- Matching secondary data diperole.h with actual conditions in the field.
- Ensuring source of waste generation,
- Early preparation for the determination of the sampling point and sampling.

Of the total number of 242 physicians who practice in the area Karees, taken as many as 15% of the total amount, so the example of waste is considered to represent as many as 36 doctors. The standard amount of 15% refers to the opinion of Arikunt, ie "If less than 100, preferably taken all, so research is a population study". Furthermore, if the amount of the subject is large, it can be between 10-15%.

Based on preliminary results, it was determined that the sampling points are considered to represent the Karees region, as many as 36 doctors spread Karees region. Selection of sample points based on:

- a. Ease in sampling at the source, where the sample can be reached by observers.
- b. Medical practice activities actively.
- c. The selected sample points representing each district contained Karees region.

Of the 36 samples above, the selected sample points are:

- General Practitioners (15)
- Dentist (6)
- Specialist Doctors Dermatology (1)
- Surgery Specialists (2)
- Pediatrician (4)
- ENT Specialist Doctor (1)
- Specialist Doctors Obsetric and Gynecology (2)
- Neural Specialist Doctor (1)
- Ophthalmologist (2)
- Specialist Physician Life (2).

Sampling was performed for 6 consecutive days (Monday, June 28, 2019 - Saturday, July 3, 2019) plus 1 day on the day of Tuesday, July 6, 1999, which is useful to change if there is missing data. Average time of sampling adapted to the work schedule garbage worker, namely at 06.00 until 13.00.

Garbage from each sampling point recorded volume and weight every day, which are collected with plastic bags. The equipment required in the measurement of generated waste consisted of personal protective equipment such as lab coats, gloves, masks and sampling sampling equipment such as a box made of iron berukuran 30 cm x 30 cm x 40 cm, with a high scale. In addition, it takes the scales measuring 5 kg and 7 kg, a large shovel, garbage scavengers, garbage pads and plastic bags.

IV. RESULTS AND DISCUSSION

From observations during the study period gained an average waste generation amounted to 53.428 kg / day. Based on the type of activity, waste generation are differentiated practice physicians on medical waste and non-medical garbage. Direct measurements in the field shows that most of the waste generated in the form of non-medical trash, amounting to 41.607 kg / day (wet weight) of the total weight and medical waste generated is as much as 5.821 kg / day (wet weight). So it can be a percentage of the average medical waste amounted to 10.9%, while the average non-medical garbage of 89.1%. Moreover, the average volume of waste generated at 702.3 liters / day. To determine the waste generated during the study period, it can be seen in Table 3.

Table 3 Period Setama Waste Generation Research (Kg)

Generation	I	II	III	IV	V	VI	VII
Total	73 300	50 900	49 600	43 650	54 150	44 250	58 150
Average	2.0361	1.4139	1.3778	1.2125	1.5042	1.2292	1.6153

Source: Research Findings, 2019

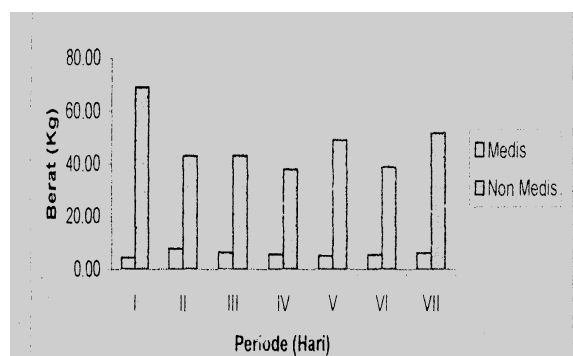
Table 4 below shows the acquisition of waste generation.

Table 4 Acquisition of Waste Generation

Period	Weight (kg / day)		Volume (Lt / day)
	Medical	non-medical	
I	4275	69 025	817.2
II	7,850	43 050	689.4
III	6,300	43 300	661.5
IV	5,700	37 950	605.7
V	5,050	49 100	686.7
VI	5375	38 875	713.7
VII	6,200	51 950	741.6
Total	40 750	333 250	4915.8
Average	5,821	47 607	702.3

Source: Research Findings, 2019.

Figure 1 below shows a comparison chart between the medical waste and non-medical garbage.



Picture 1 Chart comparison of medical waste and non-medical trash

To determine the average data of waste every home practice, can be seen in Table 5. To determine the composition of medical waste and garbage non-medical areas of study, it can be seen in Table 6 and 7.

As in classification of medical waste composition above is as follows:

- Paper: Tissue, Cotton, Tampon, dressing
- Plastic: Bottles infusion, drug packaging,
- Textiles: Mask, Bandage Cloth
- Rubber Gloves
- Glass: Bottle medicine, Pipette
- Syringes: Needles, ampoule
- Drugs: Drugs expired, Tools contraception

Table 5 Average house Practices Each Waste Generation (kg / day)

samples	Medical	non-medical
1	0336	0743
2	0332	1,414
3	0400	1,836
4	0029	1,414
5	0007	1,464
6	0111	1,032
7	0114	1564
8	0143	2,093
9	0150	1,043
10	0136	2,043
11	0082	0896
12	0471	0907
13	0086	1,336
14	0107	1,336
15	0093	1,764
16	0132	1,368
17	0086	0950
18	0036	1,079
19	0421	0721
20	0193	1,129
21	0621	1,179
22	0254	1,111
23	0029	1,079
24	0043	1,264
25	0014	2,043
26	0136	1,593
27	0171	1,843
28	0071	1,393
29	0014	0750
30	0136	1,114
31	0443	1,336
32	0029	0921
33	0036	1,171
34	0079	1,650
35	0282	1,018
36	0000	2,021
Total	5,821	47 607
Average	0162	1,322

Source: Research Findings, 2019.

Table 6 Non-Medical Waste Composition Study Area

No.	Trash Composition	On average Generation (kg / day)
1	Paper	6:09
2	Plastic	6:30
3	organic	33.17
4	textiles	0.63
5	Rubber	0:09
6	Glass	0.60
7	Metal	0.73
total		47.61

Source: Research Findings, 2019

Table 7 Medical Waste Composition Study Area

No.	Trash Composition	On average Generation (kg / day)
1	Paper	5:23
2	Plastic	0:03
3	textiles	0:13
4	Rubber	0:08
5	Glass	0:10
6	Lat syringe	0:17
7	Drug	0:09
total		5.82

Source: Research Findings, 2019

V. CONCLUSION

Based on the results of research in the field, it can be seen that from the doctor activity generated medical waste other than non-medical trash from domestic activities. Most of the waste produced is in the form of non-medical waste, as many as 89.1% (wet weight) and only 10.9% (wet weight) is composed of medical waste. Although the amount of medical waste is smaller, but the sort of rubbish were very high potential to transmit the disease, so it requires special handling in system management. This waste generation data is required in the planning, management or the medical waste management systems.

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