Analysis of Handler Hygiene with Coliform Content at Drinking Water Depots in the Former Maospati District, Magetan Regency in 2024

Alvyani Novita Sari[1*], Riska Ratnawati[2], Karina Nur R[3]
Environmental Health Specialization, Bachelor of Public Health Study Program, Stikes Bhakti Husada Mulia Madiun, Indonesia[1*23]
Email: alvyanins@gmail.com[1*], riskaratnawati@yahoo.com[2], karinanur46@gmail.com[3]

Abstract
This study aims to analyze the relationship between handler hygiene and the content of coliform bacteria in drinking water depots in the former Maospati District, Magetan Regency in 2024. Coliform bacteria are used as an indicator of fecal contamination in drinking water, which can pose serious health risks for consumers. The research method used is analytical observational with a cross-sectional approach. Sampling was carried out at simple random from 52 drinking water depots, with a total of 19 samples analyzed using the Most Probable Number (MPN) method to determine the concentration of coliform bacteria. The research results showed that the majority of drinking water depots (59%) had poor handler hygiene, while the remaining 41% had good hygiene. Microbiologically, 51.3% of water samples did not meet the requirements because they contained coliform bacteria, while 48.7% met the requirements. Statistical analysis showed a significant relationship between poor handler hygiene and high levels of coliform content (p = 0.001), with a relative risk 12.2 times higher. This study makes an important contribution to knowledge about drinking water safety in the region, highlighting the importance of sanitation and hygiene monitoring in drinking water depots to reduce public health risks. Recommendations from this research include increased supervision and training for drinking water depot managers, as well as the need to strengthen regulations and implement stricter sanitation hygiene standards.
Keywords: Handler Hygiene, Coliform Content, Drinking Water Depot, Magetan

INTRODUCTION

Coliform is a group of bacteria that is used as an indicator of fecal pollution and unfavorable conditions for water, food, milk and dairy products. Coliforms as a group are characterized as a group of rod-shaped, gram-negative, non-spore-forming, facultative aerobilic bacteria that ferment lactose by producing acid and gas within 48 hours at 370C. The presence of coliform bacteria in food and drink indicates the possibility of enteropathogenic and toxigenic microbes that are dangerous to health. The availability of good quality water sources is very limited due to the lack of public awareness of environmental pollution. One of the microbiological pollutions that occurs in waters is the abundance of coliform bacteria and microorganisms which indicate contamination by pathogenic bacteria. For this reason, it is necessary to check the content of coliform bacteria in waters used for the management of these waters and the management of

waste disposal for industrial and industrial activities. household. The higher the coliform content in water, the higher the presence of other pathogenic bacteria. This can cause health problems for humans as a result of these waters if this water source is used for human activities. .(Kurahman, Rohama and Saputri, 2022)

Drinking water depots are industries that manage raw water so that it can be consumed directly and sold to consumers. Refillable drinking water usually goes through a purification process either by ultraviolet irradiation, ozonation, or both so that it can be drunk directly. The drinking water depot business has huge opportunities in marketing because it can make big profits with little capital. Apart from that, consumers consider drinking water depots to be relatively cheap compared to branded bottled drinking water and can make work easier so there is no need to boil drinking water. Drinking water needs to be tested for drinking water quality in a laboratory recommended by the Regency/City Government or that has been accredited. Drinking water quality testing is carried out at least once every six months.(Chandra et al., 2024)

According to Minister of Health Regulation No. 43 of 2014, sanitation hygiene requirements in drinking water management include aspects of place, equipment and handlers. The depot location is in an area that is free from environmental pollution and disease transmission. Then there is a strong, clean and safe building, the floors and walls of the depot are made of water-resistant materials. The roof and ceiling of the depot must be strong and easy to clean(Permenkes, 2014). According to(Selomo et al., 2018)Environmental hygiene and sanitation influence the presence of coliform bacteria contamination in refilled drinking water. Hygiene and sanitation are health efforts to reduce factors that cause contamination of drinking water and the facilities used for processing, storing and marketing drinking water.

According to WHO, in developed countries each person needs between 60-120 liters of water per day, while in developing countries, including Indonesia, each person needs between 30-60 liters of water per day (Muthaz et al., 2017). One of the main needs of humans is drinking water. Humans cannot live without water. Humans can live up to two months without eating, but humans can only survive for two to three days without drinking. Drinking water that meets established health requirements should not be contaminated by pathogens or other substances that could be harmful to human health.(Badun, 2021)

According to Riskesdas 2018, the water sources used by households in Indonesia as drinking water are: protected dug wells (24.7%), tap water (14.2%), drilled wells/pumps (14.0%), and DAM (Drinking Water Depot) water (13.8%). Based on where you live, both in urban and rural areas, the main source of drinking water is quite varied, in urban areas households use water from drilled wells/pumps (32.9%), and tap water/PDAM (28.6), while in rural areas more use wells. sheltered dig. The national need for water at the household level in Indonesia reaches 2 L per day and can even be 100 L per day(MZ, EG and MU, 2022)

Based on the health profile of Magetan Regency in 2021, the data reported regarding drinking water depots in the Magetan Regency area is 242 drinking water depots with a total of 22 health centers in Magetan Regency. With a percentage of 88.9% that meets health quality requirements. Meanwhile, data on the health profile of

Magetan district in 2023 has 268 registered drinking water depots with a percentage of 94.0% that are suitable for sanitary hygiene.

Data on drinking water depots in Maospati District, there are 101 drinking water depot facilities in 2024, including the working areas of Tebon Health Center, Kartoharjo Health Center, Sukomoro Health Center, Karangrejo Health Center, Ngujung Health Center, Taji Health Center, Maospati Health Center, Rejomulyo Health Center.

Permits to open DAM businesses in various provinces are issued by the local regional government, usually through an integrated licensing agency which will ask for recommendations from the local Health Service, based on sanitation inspections and laboratory examination results including the POM Center, Environmental Health Engineering Center (BTKL). The existence of DAM continues to increase in line with the dynamics of the community's need for quality drinking water that is safe for consumption, although not all DAM products are guaranteed safe. This happens because of weak supervision from the relevant agencies. Insufficient supervision of the DAM resulted in the production process not being properly supervised. One of the health impacts due to inadequate sanitation hygiene is diarrhea. Diarrhea in Indonesia is still a health problem when viewed from the morbidity and mortality rates it causes.(Health et al., 2019)

Coliform bacteria are bacteria that live in the human intestine, so if drinking water contains coliforms, then this is an indicator that the drinking water has been contaminated by feces. This situation may be caused by the poor health of the handlers, the physical quality of the DAMIU, poor raw water sources or inadequate sanitation hygiene and sanitation facilities, all of which are interrelated and cannot be separated. Environmental hygiene and sanitation influence the presence of coliform bacteria contamination in refilled drinking water. Hygiene and sanitation are health efforts to reduce or eliminate factors that cause contamination of drinking water and the facilities used for processing, storing and marketing drinking water.

Hygiene sanitation in health efforts to reduce or eliminate factors that cause contamination of drinking water and the facilities used for processing, storing and distributing drinking water. Hygiene sanitation of refill drinking water depots includes premises, equipment, raw water sources and handlers(Chandra et al., 2024).

In Indonesia, the quality of refill drinking water began to be questioned after the POM carried out inspections of several refill drinking water depots in large urban areas. The results of the examination found colliform bacteria in the water produced by the refill drinking water depot. The bacteria found in refillable drinking water do not cause a reaction in a short time. However, over a certain period of time it can cause a number of diseases, such as diarrhea. The presence of colliform bacteria in refillable drinking water is caused by imperfect hygiene in the production of refillable drinking water(Nurkholis, 2019).

The positive impact of having a drinking water depot is, providing safe and healthy quality water for users, individuals and communities, providing water that meets the quantity, providing water continuously, easily and cheaply to support individual and household hygiene. On the other hand, the development of refill drinking water depots has the potential to have a negative impact on consumer health, if there is no effective regulation. The issue that is currently emerging is the low-quality assurance of the

drinking water produced. If not controlled optimally, drinking water depots have the potential to cause harm to health, for example persistent chemical poisoning or the spread of water-borne diseases.

There is a very continuous impact on society, namely the decline in drinking water related to the high increase in population, problems of poverty and pollution, while the addition of facilities and limited drinking water coverage. to end poverty, reduce inequality and protect the environment. One of the goals is to ensure the availability and sustainable management of clean water and sanitation for all by setting the target by 2030 to achieve universal and fair access to safe and affordable drinking water for all.(Zarifah, Navianti and Yulianto, 2022)

Previous research conducted in various cities in Indonesia showed variations in the presence of bacteria in refilled drinking water. The results of research conducted by(Selomo et al., 2018)Hygiene and sanitation conditions of 9 refill drinking water depots in Campalagian District, Polewali Mandar Regency, namely 5 depots or 55.56% meet physical feasibility. This means that as many as 4 depots or 44.44% do not meet physical feasibility. Important aspects to pay attention to are aspects of cleanliness and behavior of handlers as well as the availability of basic sanitation facilities, including: waste water disposal facilities (SPAL), rubbish dumps, and hand washing facilities. Other research conducted by(Zarifah, Navianti and Yulianto, 2022)The results of the microbiological quality test at the refill drinking water depot contained one that did not meet the microbiological requirements because it was positive for Coliform bacteria. refill drinking water and there are 15 DAMIUs that do not have a DAMIU sanitation hygiene certificate. Meanwhile, from the sanitation hygiene requirements for the management of refillable drinking water, it was found that the majority of workers and those holding certificates were in the category of not meeting health requirements.

Based on reports regarding Drinking Water Depots in Magetan Regency, several depots do not meet health quality requirements and have not been certified in terms of hygiene. To overcome this problem, an intensive program of coaching and supervision of Refill Drinking Water Depots is needed, including training on hygiene and sanitation for depot managers and employees. This aims to minimize drinking water pollution due to the physical condition of the depot and unhygienic behavior. This background encourages research on "Analysis of Sanitation Hygiene with Coliform Content at Drinking Water Depots in the Sukomoro Health Center Working Area in 2024". The benefits of this research include contributions to literature and science for STIKES Bhakti Husada Mulia Madiun, as well as as a reference and source of information for researchers and Drinking Water Depot managers, as well as evaluation for related health agencies to improve guidance and supervision of drinking water quality.

RESEARCH METHODS

Research design

This research is a type of analytical observational research with a cross-sectional approach. Total Coliform bacteria examination was carried out on drinking water samples using laboratory tests at the Surabaya D3 Sanitarian Polytechnic, Magetan Campus, which was carried out in June 2024. The results were adjusted based on guidelines from Minister of Health Regulation No. 492 of 2010 concerning drinking water

quality requirements. The population in this study was the drinking water depots in the working areas of Sukomoro Community Health Center, Tebon Community Health Center, Kartoharjo Community Health Center, Rejomulyo Community Health Center, totaling 52 depots with sampling using Simple Random Sampling, totaling 19 depots with 100ml water sampling. Data collection by direct observation at DAMIU using questionnaire observation sheets and laboratory examinations using the Most Probable Number (MPN) Method

Population and Sample

(Salsabila, P and Nugraha, 2023)put forward a definition of population, namely as "A generalized area consisting of: objects or subjects that have certain qualities and characteristics determined by the researcher to be studied and then conclusions drawn". Population is not just people, but also other natural objects. Population is also not just the number of objects or subjects, but includes all the characteristics or properties of the object or subject.

The population in this study was the drinking water depots in the working areas of Sukomoro Health Center, Tebon Health Center, Kartoharjo Health Center, Rejomulyo Health Center, Ngujung Health Center, Maospati Health Center, Karangrejo Health Center, Taji Health Center totaling 101 depots using Simple Random Sampling. totaling 29 depots with 100ml water sampling. The independent variable in this research is handler hygienewhile the dependent variable in this study is coliform content.This research looks at and studies the hygiene factors of handlers at DAMIU in Maospati District, Magetan Regency.

The sample is a part or representative that has representative characteristics of the population. To be able to determine or determine the right sample, researchers need a good understanding of sampling, both determining the number and determining which samples to take. Errors in determining the population will result in inaccurate data being collected so that the research results are not of good quality, are not representative, and do not have good generalization power. The researcher's understanding of the population and sample is essential because it is one of the determinants in collecting research data.(Amin et al., 2023)

The sample in this study used a random sampling technique using the Slovin formula

Sampling Techniques

Sampling is a method used to take samples that are truly in accordance with the overall research object. The sampling technique in this research is random sampling carried out randomly.(Amin et al., 2023). Proportional random sampling technique was used with the aim of obtaining a representative sample by looking at the population of the drinking water depots of the Ex Dostrik Maospati Magetan so that each community health center working area was still taken as a sample.

How to take samples to check the quality of refill drinking water bacteriologically is explained in detail. The tools and materials needed include test tubes, Durham tubes, Bunsen tubes, matches, label paper, stationery, incubator, water samples, 70% alcohol, and media such as TSL, SSL, and BGLB. The sampling procedure is carried out by sterilizing the equipment, taking a refillable drinking water sample of 10 ml, and marking the label where the sample was taken for identification. Data processing uses editing,

coding, entry, cleaning and tabulating techniques. The test was carried out using the MPN Coliform laboratory test method 511 to identify the content of Coliform bacteria in drinking water. The research location is in the former Maospati District, Magetan Regency, in 2024. The data collection process involves observation, direct interviews, and the use of questionnaires to collect primary and secondary data. In addition, the importance of research ethics with the principle of informed consent is emphasized so that the rights of respondents are respected at every stage of this research.

RESULTS AND DISCUSSION
A. Research result
1. General Description of Research Locations

This research was conducted in the Maospati District, Magetan Regency, where there are 8 health centers, namely the working area of the Maospati health center, the working area of the Sukomoro health center, the working area of the Tebon health center, the working area of the Taji health center, the working area of the Kartoharjo health center, the working area of the Karangrejo working health center, the working area of the Ngujung Community Health Center, the working area of Rejomulyo health center. The total population of drinking water depots in the former Maospati District is 101 DAM.

2. Univariate Analysis
a. Handler Hygiene

The results of research on the hygiene variables of handlers at drinking water depots in the former Maospati District, Magetan Regency in 2024 were obtained from the results of questionnaire observations of depot owners/managers as seen in table 3 below:

Table 1. Sanitation Analysis of Production Sites at Drinking Water Depots in the Former Maospati District, Magetan Regency.

Handler Hygiene	Frequency(N)	Percent (%)
Bad	23	59.0%
Good	16	41.0%
Total	39	100.0%

Source: Primary Data and Research Results for July

Based on table 3, it is known that the variable of handler hygiene is poor with a fairly high percentage, namely 23 drinking water depots with a percentage of 59.0% compared to good handler hygiene of only 41.0% totaling 16 drinking water depots.

b. Coliform Content

The research results obtained from the MPN Coliform Test of drinking water depots show that the number of bacteria found in the owners/managers of drinking water depots in Maospati District, Magetan Regency can be seen in table 2 below:

Table 2. Analysis of Coliform Content in Drinking Water Depots in the Former Maospati District, Magetan Regency in 2024

Content Coliforms	Frequency(N)	Percent (%)
Not eligible	20	51.3%
Qualify	19	48.7%
Total	39	100.0%

Source: Primary Data and Research Results for July

Based on table 2 above, it shows that 51.3% of all samples taken did not meet the requirements of all water samples and 19 samples did not meet the requirements with a percentage of 48.7%.

3. **Bivariate Analysis**

Analysis of the Relationship between Handler Hygiene and Coliform Content in Drinking Water Depots

The results of research regarding the analysis of the relationship between handler hygiene and coliform content in the drinking water depot of the Former Maospati District, Magetan Regency are as follows:

Table 3. Analysis of the Relationship between Handler Hygiene and Coliform Content at Drinking Water Depots

Handler Hygiene	Coliform content meets requirements		Coliform content does not meet requirements		95%CI	P
	N	%	N	%	(2.57-58.5)	0.001
Bad	6	15.4%	17	43.6%		
Good	13	33.3%	3	7.7%		
Amount	19	48.7%	20	51.3%		

Source: Primary Data and Research Results for July

From table 6 it can be seen that the majority of handlers' hygiene was poor, namely 53.8%, while good handlers' hygiene was 0.0%, the coliform content did not meet the requirements. Based on the results of the chi square test with a significant p value of 0.001 because p = 0.001 < 0.05, H0 is rejected. So it means that there is a relationship between handler hygiene and the coliform content of Ex Maospati District, Magetan Regency with RP 12.2 (95% CI 2.57-58.5). Because RP > 1, handler hygiene is a risk factor for coliform content. Drinking water depots with poor equipment sanitation have a 12.2 times risk of being contaminated with coliform bacteria.

B. **Discussion**

1. **Handler Hygiene**

Based on univariate analysis, it is known that the majority of drinking water depots with a percentage of 79.5% have poor user hygiene, while the percentage of drinking water depots with good equipment sanitation is 20.5%.

Hygiene Handlers are one of the factors that can cause bacterial contamination of drinking water. The water treatment process at refillable drinking water depots is not entirely done automatically, so it can affect the quality of the water produced because humans are warm-blooded creatures, so microorganisms can proliferate in the human body quickly, especially if they don't practice. All operators of refilled drinking water production again have the responsibility to maintain personal cleanliness, pay attention to hygiene, practice food and drink safety, and be given training.(Kepmenperindag, 2004)

Based on the results of observations that have been made, all drinking water depot handlers do not use handscoons during the water refill process and do not carry out regular health checks but instead buy medicine. Apart from that, not all drinking water depots have hygiene education certificates to improve the sanitation hygiene knowledge and skills of owners and handlers.It is best for the operator in charge or depot owner to take a sanitation hygiene course organized by the Regency or City Department in order to get correct and clear sources regarding the sanitation hygiene of drinking water depots.

2. Coliform Content

Based on research that has been carried out on drinking water depots in the Maospati District, Magetan Regency, covering the working areas of the Maospati Community Health Center, Tebon Community Health Center, Karangrejo Community Health Center, Kartoharjo Community Health Center, Rejomulyo Community Health Center, Sukomoro Community Health Center, Ngujung Community Health Center, it is known that there are 39 drinking water depots from the Community Health Center. that there is coliform content from laboratory test results. Of the 39 refill drinking water samples, 20 samples or 51.3% did not meet the requirements of Ministerial Decree NO 492 of 2010. And 19 samples or 48.7% met the requirements.

*Coliforms*is a group of bacteria that is used as an indicator of dirt pollution and unfavorable conditions for water, food, milk and milk products. Coliforms as a group are characterized as a group of rod-shaped, gram-negative, non-spore-forming, facultative aerobilic bacteria that ferment lactose by producing acid and gas within 48 hours at 370C. The presence of coliform bacteria in food and drinks indicates the possibility of enteropathogenic and toxigenic microbes that are dangerous to health. .(Kurahman, Rohama and Saputri, 2022)

Based on research, it can be seen that the coliform content in drinking water depots is caused by several factors, namely sanitation of the production site, sanitation of production equipment and poor hygiene of handlers, which will cause the quality of drinking water depots to get worse or the coliform content to increase.

3. The Relationship Between Handler Hygiene and Coliform Content at Drinking Water Depots in Maospati District, Magetan Regency

From the statistical test results, it was concluded that handler hygiene had a relationship with coliform content (p= 0.001) where the coliform test result was 43.6% which did not meet the requirements. The magnitude of the risk of coliform content can be seen from the RP value = 12.2, which means that poor

handler hygiene has a risk of coliform content in drinking water depots that is 12.2 times greater than good handler hygiene and the coliform content meets the requirements.

The research results are strengthened by(Hidayati, 2022)In testing the relationship between personal hygiene and Coliform bacterial contamination of refilled drinking water using the ChiSquare test, a correlation of p-value = 0.017 was obtained, because p <0.05 means that there is a relationship between personal hygiene and bacterial contamination. The habit of not washing your hands after handling objects and not wearing clean work clothes has the potential to cause bacterial contamination of drinking water. This is also confirmed by research(Zarifah, Navianti and Yulianto, 2022)Based on the results of interviews conducted with each refill drinking water depot owner, 3 DAMIUs had certificates of having taken a refill drinking water depot sanitation hygiene course and 15 DAMIUs had never taken a refill drinking water depot sanitation hygiene course. According to research results at DAMIU in Lahat Regency, it was reported that the majority of handlers did not receive training.

It is known that the results of researchers' observations show that handler hygiene is poor with a coliform content that does not meet the requirements of 43.6%. This is caused by several other factors, namely not washing your hands with soap using running water and not using handscoon during the water filling process which can trigger bacteria to appear. And if you are sick, just buy medicine and don't do an examination. There are several depots that do not yet have a hygienic certificate to improve the sanitation hygiene knowledge and skills of owners and handlers.

CONCLUSION

Conclusions from research conducted at drinking water depots in Maospati District, Magetan Regency in 2024 show that some depots do not meet the requirements for Coliform content and the hygiene of most handlers is poor. There is a significant relationship between handler hygiene and the coliform content in these depots. Based on these results, it is recommended that drinking water depot owners routinely check drinking water samples, provide sterile gloves for employees, and implement the habit of washing hands before serving consumers. Health agencies, such as the Health Service or Community Health Center, are also advised to carry out regular sanitation supervision of depots, check employee health, and carry out regular sanitation inspections. It is hoped that these steps can prevent pollution and improve the quality of drinking water at refill drinking water depots.

BIBLIOGRAPHY

Akili, RH et al. (2018) "Analysis of Total Bacterial Content of Colifom in Clean Water and Eschererchia Coli in Drinking Water at Refillable Drinking Water Depots in the Tuminiting Health Center Working Area, Manado City," Public Health, 7(1), p. 47–

52.

Amin, NF et al. (2023) "INTRODUCTION Research is a creative process to reveal a phenomenon in its own way so that information is obtained. Basically, this information is the answer to the problems previously asked. By ka," 14(1), p. 15–31.

Ardiansyah, Risnita and Jailani, MS (2023) "Data Collection Techniques and Scientific Educational Research Instruments in Qualitative and Quantitative Approaches," IHSAN Journal: Journal of Islamic Education, 1(2), p. 1–9. doi: 10.61104/ihsan.v1i2.57.

Badun, A. (2021) "The Relationship of Drinking Water Depot Sanitation with the Presence of Coliform and Eschericia Coli," MIRACLE Journal of Public Health, 4(2), p. 187–194. doi: 10.36566/mjph/vol4.iss2/264.

Chandra, T. et al. (2024) "Sanitation Hygiene Factors at Refill Drinking Water Depots (Damiu)," Aisyiyah Medika Journal, 9(1), p. 325–337.

Dewanata Putra, E. et al. (2023) "Analysis of Escherichia Coli Content in Drinking Water at the Water Refill Depot in Tuntungan Village," Journal of Health and Medical Research, Vol. 3(No. 3), p. 402–407.

Hadiansyah, NK (2021) "Analysis of Coliform Bacteria in Pamsimas Drinking Water Samples in Kuningan Regency," Kartika Kimia Journal, 4(2), p. 89–95. doi: 10.26874/jkk.v4i2.89.

Hidayati, N. (2022) "The Relationship between the Quality of Hygiene and Sanitation of the Processing Process, Equipment and Personal Hygiene of Employees on Coliform Contamination at the Refillable Drinking Water Depot (DAMIU) in the North Sangatta Village Area."

Kepmenperindag (2004) "Kepmenperindag," Current topics in microbiology and immunology, 284, p. 99–119. Available at: https://lib.unnes.ac.id/17153/1/1201408017.pdf.

Health, J. et al. (2019) "Equatorial Public Health Journal http://openjurnal.unmuhpnk.ac.id/index.php?journal=jkmk&page=index," 7(4), p. 1–8.

Kurahman, T., Rohama, R. and Saputri, R. (2022) "Analysis of Coliform Bacterial Contamination and Identification of Escherichia Coli Bacteria in Gallon Water in Sungai Danau Village," Journal of Pharmaceutical Care and Sciences, 3(1), p. 76–86. doi: 10.33859/jpcs.v3i1.224.

MZ, MZ, EG, EG and MU, MU (2022) "Analysis of Factors Associated with Access to Safe Drinking Water in the OKU District Health Service Work Area in 2021," Saelmakers PERDANA Health Journal, 5(1), p. 73–84. doi: 10.32524/jksp.v5i1.392.

Negara, IC and Prabowo, A. (2018) "Use of the Chi-Square Test to Determine the Effect of Education Level and Age on Knowledge of IDUs Regarding HIV-AIDS in DKI Jakarta Province," Proceedings of the 2018 National Seminar on Mathematics and its Applications, 1(1), matter. 1–8.

Nurkholis, R. (2019) "Legal Protection for Consumers of Refillable Drinking Water," 1, p. 1–10.

Pakpahan, RS, Picauly, I. and Mahayasa, INW (2019) "Escherichia coli Microbial Contamination and Total Coliform Bacteria in Refillable Drinking Water," Public

Health: National Public Health Journal, 9(4), p. 300. doi: 10.21109/kesmas.v9i4.733.

Permata, AD and Gusnita, P. (2020) "Abdurrab University Using the Most Probable Number (MPN) Method," Higea Pharmacy Journal, 11(2), p. 154–158.

Minister of Health Regulation (2014) "Permenkes RI. Regulation of the Minister of Health of the Republic of Indonesia Number 43 of 2014," 2008, p. 6.

Putri, I. and Priyono, B. (2022) "Analysis of Coliform Bacteria in Drinking Water Refills in Gajahmungkur District," Life Science, 11(1), p. 89–98.

Rahmiati, R. (2020) "Microbiological Examination of Refill Drinking Water Quality," Journal of Natural Sciences, 1(1), p. 31–37. doi: 10.34007/jons.v1i1.141.

Rosmania, R. and Yuniar, Y. (2021) "The Effect of Storage Time for Escherichia coli and Staphilococcus aureus Inoculum at Cold Temperatures on the Number of Bacterial Cells in the Microbiology Laboratory," Science Research Journal, 23(3), p. 117. doi: 10.56064/jps.v23i3.624.

Salsabila, RADA, P, DRS and Nugraha, RN (2023) "The Influence of Price, Product and Service Quality on Customer Satisfaction (Study of Depok Cuci Mouth Cafe Visitors)," Research Innovation Journal (JIP), 3(February), p. 7611–7617.

Selomo, M. et al. (2018) "Hygiene and Sanitation of Refillable Drinking Water Depots in Campalagian District, Polewali Mandar Regency," National Journal of Health Sciences, 1(2), p. 1–11.

Warpala, IWS and Suryanti, IAP (2019) "Physical Parameters and Nearest Estimated Number of Coliforms in Buyan Lake Water, Pancasari Village, Sukasada District, Buleleng," 6(1), p. 178–188.

Zarifah, DA, Navianti, D. and Yulianto, Y. (2022) "Hygiene Sanitation of Refill Drinking Water Depots and Microbiological Quality of Refill Drinking Water in the Bukitsangkal Health Center Working Area, Palembang City," Journal of Environmental Sanitation, 2(2), p. . 85–92. doi: 10.36086/jsl.v2i2.1304.

Zulhilmi et al. (2019) "Factors Related to the Level of Clean Water Consumption in Households in Peudada District, Bireun Regency," Journal of Biology Education, 7 (November), p. 110–126.