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Analysis Of Drinking Water Depot Sanitation Hygiene In The Working Area Of The Siak Hulu Public Health Community, Kampar District, In 2023

Melfa Hadani Indri Yana¹, Herniwanti^{2*}, Ahmad Satria Efendi³, Zulmeliza Rasyid⁴, Yeyen Gumayesty⁵

^{1,2,3,4,5} Universitas Hang Tuah Pekanbaru

ABSTRACT

Drinking water depots are a source of drinking water that is widely used by the public, which poses a health concern if hygiene and sanitation standards are not met. Based on the background of the problem and the results of the initial survey, it was discovered that there were still aspects that were not in accordance with health standards, such as: workers never checked their health, did not wash their hands before filling gallons of water, workers smoked, and depots were close to domestic sewerage. The goal of this study was to examine the sanitary cleanliness of drinking water depots in the operating region of Puskesmas Siak Hulu I Kampar Regency in 2023. This kind of qualitative study employs the phenomenological approach to gather data through observation and in-depth interviews with eleven informants regarding the application of triangulation techniques in data processing. The study's findings indicate that: the location's sanitary hygiene conditions do not meet regulations; the depot's equipment is excellent, but sanitation facilities are still subpar; a hand washing station is not available; and handlers' personal hygiene does not comply with regulations. The majority of owners and servers don't wear designated work uniforms; servers smoke; they don't practice good hygiene; they don't perform routine health examinations; they don't have a sanitation hygiene course certificate; some depots don't have a production permit or don't renew it; and four depots' production water doesn't meet regulations. All depots are expected to receive stringent advice and oversight from the health center, and depot owners need to focus more on maintaining the hygienic conditions of their drinking water depots.

Keywords : hygiene, sanitation, drinking water, drinking water depot

coresponding author: herniwanti@htp.ac.id

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INTRODUCTION

Drinking water is raw water that has been processed and is safe to drink. Water that goes through a treatment process or without a treatment process that goes through the conditions so that it can be drunk directly, water has an important role for all living things. Water is used to fulfill the daily needs of living things, including humans. Based on the results of the Basic Health Research (Riskesdas) in 2018, in Indonesia 46.5% of households consume water as much as 100 liters / person / day and 53.5% of households that have not obtained optimal access to clean water. In Indonesia, clean water is used for drinking water raw materials, and other purposes such as washing clothes, cooking, bathing and other sanitary hygiene needs. (1,2).

A refillable drinking water depot is a business entity that produces refillable drinking water in bulk and unpackaged form for community use. In terms of price, refillable drinking water is cheaper than bottled drinking water, some even provide prices up to one-third of the price of bottled drinking water. Refillable drinking water is one of the answers to fulfill the drinking water needs of the Indonesian people because it is cheap and practical. This is the reason why many people choose refill drinking water for consumption. However, in terms of its quality, the public still has doubts because there is no clear information in terms of the process or regulations regarding its circulation and supervision (3,4).

Drinking water depots in the world and in accordance with existing regulations must meet drinking water quality requirements that have been regulated by the Permenkes in 2010 concerning mandatory parameter thresholds, for example regarding microbiology such as tests (E.coli bacteria), regarding chemicals such as (argon chemical elements, fluorine, chromium etc.) and those that are not directly related such as odor, temperature, color etc.) and hygiene and sanitation requirements for depots from location, building, water treatment facilities, etc.. The drinking water depot business must obtain clean water from various sources (PDAM, spring water tank car, etc.) filtration can be done with activated carbon, there may also be a process with ozone, the final process a.l with UV light, packaging water gallons. The presence of bacteria in water greatly affects the quality of drinking water. The less the bacteria content in drinking water, the better the quality of drinking water, while the greater the number of bacteria in water, the worse the quality of drinking water (5), (6).

Based on data obtained from the Siak Hulu I health center, the number of refill drinking water depots in the work area of the Siak Hulu I health center in 2022 was 27 refill drinking water depots, there were 17 refill drinking water that met the requirements and 10 refill drinking water depots did not meet the requirements. This explains that the refill drinking water depot in the health center area siak hulu I Kampar Regency There are still drinking water depots that do not meet hygiene requirements and are still not guaranteed for their production. The purpose of the study is to analyze the sanitary hygiene of drinking water depots in the Siak Hulu I Health Center Work area of Kampar Regency in 2023.

METHODS

This research was conducted using descriptive research design with a qualitative approach with Phenomenological Design. The research conducted in-depth interviews with research subjects, lab tests and described the Hygiene Analysis of Drinking Water Depot Sanitation in the Working Area of the Siak Hulu I Health Center, Kampar Regency in 2023. The research and examination time was carried out in May - July 2023 in the Siak Hulu I health center area of Kampar district in 2023.

In this subject, there will be 5 refill drinking water depots, namely 5 depots that do not meet the requirements for refill drinking water depots operating in the Siak Hulu I Health Center Working Area. Informants in this study are willing to be interviewed and are able to provide good and correct information, consisting of main, key and supporting informants.

Data processing uses the Triangulation technique of theory, data and methods. Data analysis obtained from interviews is presented in the form of narratives and matrices, this data analysis is carried out qualitatively where the analysis process is carried out in a closed manner, namely by using or collecting data obtained from various sources, both observation, interviews and document searches. Research must uphold research ethics which are ethical standards in conducting research that has been carried out ethical review by the ethics commission of Hang Tuah University Pekanbaru, as evidenced by the ethics letter Number: 356/KPK/UHTP/VIII/2023.

RESULT

The results of the study can be concluded that the sanitary hygiene conditions of the place do not meet the requirements, Depot equipment is quite good, but sanitation facilities are still not good, hand washing stations are not available, personal hygiene of the toaster does not meet the requirements and must be given more attention. On average, owners and servers do not wear special uniforms for work, servers smoke, lack of hygiene behavior, do not conduct regular health checks, do not have a sanitation hygiene course certificate, some Depots do not have a production license, and do not extend the production license and the quality of production water from 4 depots does not meet the requirements.

Regulations/SOPs Processing results show that on average, some depot owners have not renewed their depot licenses, and some have not made depot licenses at all. Some depot owners already have a hygiene certificate and some processing regulations/SOPs still do not meet the standards. The implementation of guidance and supervision of all drinking water depots is carried out sanitary inspections, the implementation of supervision and guidance is not routine, supervision is carried out about 1x in 6 months and 2 or 3 times a year.

In the equipment cleaning of production equipment is carried out by the owner or handler of the water depot, some depots clean the equipment regularly and some do not clean the equipment regularly such as only a few times a week. All Depot equipment is still in use, gallons are always cleaned, on average all Depots meet the standards in equipment sanitation but some do not routinely clean and cause equipment to rust quickly. And there is gallon brush equipment whose bristles have fallen off. This can result in incomplete gallon washing.

The water treatment process at the Depot already uses treatment with ozonation, UV light, disinfectants, filtration, rinsing, washing and sterilization of containers. Although there are still some depots using UV light but not turning it on during production. Personal hygiene of drinking water depot handlers on average does not meet sanitary hygiene requirements, they do not behave in a hygienic and sanitary manner such as not washing hands before serving consumers, having long nails, smoking when serving consumers, consumers do not carry out routine checks and do not attend hygiene and sanitation training, and do not use appropriate PPE and are not clean. Coaching on personal hygiene of handlers is not done regularly. Sanitation of the drinking water depot production environment still does not meet the predetermined requirements but there are also those that have met the requirements. There are still depots whose production locations such as the floor of the depot building have puddles of water, ceilings and ventilation are not clean from dust, do not have hand washing facilities, do not have a closed trash can. The hygiene and sanitation of raw water and drinking water at the depot last time the depot drinking water was checked, some met the standards and some did not meet the standards. The average depot raw water is clean and clear, but there are still some that do not have a raw water certificate. Drinking water sanitation hygiene still does not meet the requirements and not all have been tested for bacteriology.

The results of lab tests on drinking water and raw water from the results of the study seen from table 1 below can be seen that all raw water samples there are 3 depots that are free from bacteriology and 2 depots have a total bacterial calorie count of *Escherichia coli* more than 0/100ml samples with an index of 4-42 from each sample and water samples at drinking water depots there are 1 drinking water depot that is free from bacteriology and 4 drinking water depots have a total bacterial colony count of *Escherichia coli* more than 0/100 ml samples with an index of 1-33 from each sample.

Table 1

Results of Production Water Research at Drinking Water Depots in Laboratory Tests Total <i>Escherichia coli</i>				
Samples	Total		Remark	
	Raw water	Drinking water	Raw water	Drinking water
1	0 CFU/100ml	1 CFU/100ml	Comply	Not Comply
2	4 CFU/100ml	3 CFU/100ml	Not Comply	Not Comply
3	0 CFU/100ml	0 CFU/100ml	Comply	Comply

4	0 CFU/100ml	33 CFU/100ml	Comply	Not Comply
5	42 CFU/100ml	2 CFU/100ml	Not Comply	Not Comply

Data source: Laboratory Tests at the Health Office UPT Health Laboratory Pekanbaru City

Based on Permenkes RI NO.492/Menkes/IV/2010 concerning drinking water quality requirements, it states that the microbiological requirements for drinking water are 0/100 ml of sample. Based on this, the quality of drinking water from drinking water depots in the working area of the puskesmas siak hulu I Kampar Regency in 2023 still does not meet the requirements.

DISCUSSION

1. Regulation /SOP Processing

SOP From the results of this study, it is concluded that based on the results of interviews conducted with owners and handlers of refillable drinking water depots that there are several depots that meet SOP standards and some that do not as it is known that the owner says there does not have to be a Standard Operating Procedure, the important thing is that there is sterilization, washing gallons, changing the new lid. Meanwhile, according to health workers, on average, depots do not apply the SOP, some still do not have a license. DAM health regulations according to the Indonesian Ministry of Health regulation No. number 2 of 2023 concerning water quality standards and drinking water quality requirements regarding drinking water quality requirements, in this Permenkes has been regulated in the form of physical, chemical, biological quality requirement parameters for refillable drinking water products that must be obeyed (7,8).

The research analysis suggests that the Regulation / SOP in a job is very important if the workmanship in the drinking water depot is not good, one of the causes is the SOP that is not applied, the SOP in the average drinking water depot does not apply the standard operational procedures for workmanship in their drinking water depot. So that the depot owner should run the Regulation / SOP in the drinking water depot as for this Regulation / SOP includes when consumers come gallons must be cleaned and washed, when filling the handler must wash their hands first and carry out the processing process with ultraviolet light.

2. Supervision and Coaching

Supervision and guidance from the results of this study concluded that health workers do not routinely conduct supervision and guidance of Depot. Supervision is applied 1x in 6 months. The strategy carried out is the inspection of water tools and the environment. This is in accordance with the recommendations of Permenkes RI No 43 of 2014 concerning sanitary hygiene requirements for refillable drinking water depots. This study is in line with research conducted by (9) supervision of refillable drinking water depots is a government effort so that drinking water can remain in accordance with existing rules in its implementation.

In the regulation of the Indonesian minister of health number 2 of 2023 concerning quality standards and drinking water quality requirements, it is explained that to maintain the quality of drinking water produced by refill drinking water depots, there are two supervisions that need to be carried out, namely internal supervision and external supervision. Internal supervision is supervision carried out by the business actors themselves so that the water produced continues to meet the predetermined requirements while external supervision is supervision carried out by the health office of refillable drinking water depots which includes sanitation inspections, water sampling, drinking water quality testing, laboratory examination analysis, recommendations and follow-up.

3. Equipment sanitation hygiene

Equipment sanitation hygiene from the results of this study concluded that drinking water depots in the working area of the Siak Hulu 1 health center are known to clean production equipment routinely by employees of refill drinking water depots. Based on the results of interviews with Puskesmas senitarian personnel, it is known that the equipment has met the depot standards, has carried out micro filtration and macro filtration, their tools are complete enough to be said to have met the standards. But there is still a lack of cleaning

equipment. If there is damaged equipment, it must be replaced immediately, then it will be checked during the next inspection. Meanwhile, according to supporting informants, equipment such as gallon cleaning brushes have started to fall off, ceilings and Depot paint have faded due to water seepage, based on observations that need to be made that brushes for gallon cleaners have started to fall off, this right can cause not all gallon surfaces to be brushed by gallon cleaning brushes, and UV lamps are partly not turned on as we know that UV lamps are also very important to use during production.

In the regulation of the minister of health of the Republic of Indonesia number 43 of 2014 concerning hygiene and sanitation of drinking water depots explains that the equipment requirements that must be met by refillable drinking depots include maintenance must be free from dust and resistant to washing, made of food grade or non-toxic materials, do not absorb odors and flavors, are rust resistant, and can withstand disinfection. This research is in line with that conducted by (10) This study is in line with that conducted by (10) on the analysis of the sanitary hygiene of drinking water depots in the working area of the Sidomulyo health center in Bengkulu city that before filling all drinking water depots do washing and rinsing to clean gallons from the rest of the previous use and gallons that have been filled are immediately given to consumers in general the condition of the Depot equipment is good but its use is still not optimal.

4. Processing Process

The processing process from the results of this study concluded that all refill drinking water depots are carried out sanitary inspections once every 6 months. Based on the results of interviews conducted with Puskesmas sanitarian personnel that the processing process from our supervision is quite good, they do it step by step, starting with filtering, using UV light treatment, disinfecting, according to established procedures, so it meets the requirements. According to the main informant, the Puskesmas gives a warning to the Depot if the sanitary conditions of the place, production equipment, and the haigen of the handler are not in good condition, while according to supporting informants, consumers have never seen the Puskesmas visit the depot.

Supervision of refillable drinking water depots aims to protect the public from diseases or health problems originating from drinking water or clean water that does not meet health requirements through continuous water quality surveillance. It is necessary to carry out refillable drinking water supervision activities which are carried out continuously and continuously so that the water used by the population from existing drinking water supplies is of guaranteed quality, in accordance with the drinking water quality requirements listed in this decree. This research is in line with that conducted by (11) which explains that ultraviolet radiation can kill all types of microbes if the intensity and time are sufficient, there is no residue or by-products from the ultraviolet irradiation process. However, ultraviolet lamps must be cleaned regularly and must be replaced at most 1 year for the water sanitization process to be effective. Inadequate treatment (filtration and disinfection) can lead to the development of bacteria in drinking water. This study is also in line with (12) The efficiency of the reverse osmosis membrane in rejecting E.Coli bacteria is 91%.

The researcher's analysis suggests that. drinking water depot processing refill drinking water depot processing is very important, in the process of drinking water depots ultraviolet light radiation must be turned on when producing. The processing process at the drinking water depot in the working area of the siak hulu health center is quite eligible, the process they carry out goes through a predetermined process, namely through strilization, disinfecting, UV lamp lighting. So it is hoped that the processing process at the depot in the working area of the puskesmas siak hulu I can be further improved and paid attention to..

5. Personal Hygiene of Handlers

Personal hygiene from the results of this study concluded that all handlers or employees did not conduct health checks, that the refill drinking water depot never conducted routine checks for employees working at the Depot. Handlers/employees smoke, handlers do not wash their hands first before work/ in between work, while according to supporting information consumers have never seen handlers wash their hands before filling water into gallons, there are still employees who have long nails, employees are not neatly dressed.

Based on the observations made by the researchers, the handlers did not apply hand washing before work, the handlers smoked when filling gallons, the handlers were not dressed neatly, the handlers never checked their health and health facilities, this could lead to not knowing whether the handlers had infectious diseases. This is not in accordance with Kepmenkes RI No.43 / Menkes / 2014 in chapter 2 article 3 explained that employees in carrying out filling activities must meet requirements such as not suffering from easily transmitted diseases such as coughs, colds, influenza, diarrhea. Maintain the cleanliness of hands, hair, nails,

clothes, wear appropriate, clean, neat clothes, wash hands with soap every time you want to handle consumers. Sanitary hygiene is important including for the elderly and also during the COVID-19 pandemic(13), This is conveyed through the Community-Based Total Sanitation (STBM) program which consists of 5 pillars, especially pillar 3. (15–19).

This research is in line with that conducted by (20) on the hygiene and sanitation of refillable drinking water depots in the campalagian sub-district of Polewali mandar Regency, that all employees who are carrying out the washing process to filling gallons, none of them have hygiene behavior, including not washing hands before serving consumers, some do not use clean and neat work clothes. In fact, one employee was found smoking a cigarette while filling gallons.

The research analysis suggests that the role of the server is very important in the processing of drinking water depots, the server must know how the processing procedures are carried out. In beverage processing, not just anyone can be an employee. Because drinking water is one of the media that can be a transmission of disease. So that the processed drinking water must be absolutely guaranteed for consumption. Handlers are tasked with operating the water treatment system, carrying out care and maintenance of equipment used in filling drinking water. There are still many depot handlers who do not pay attention to their personal hygiene due to the lack of knowledge about sanitary hygiene in the management of drinking water depots.

6. Venue Sanitation Hygiene

The results of this study concluded that the sanitation of the production environment of refillable drinking water depots in the Siak Hulu I Health Center Working Area, there are 5 depots that still do not meet the specified requirements such as the presence of dust pollution around the location, production such as floors, ceilings are not clean from dust, lighting that is not bright enough, Do not have hand washing facilities, there are uncovered trash cans, there are disease-carrying vectors that have been seen in front of or in the depot trenches such as rats and cockroaches, there is still stagnant water and scattered garbage in the environment of the refillable drinking water depot, Depot 1 is integrated with a place to sell groceries, building tools, and insufficient lighting.

This research is in line with that conducted by (10) The results showed that the sanitary conditions at 7 drinking water depots in the working area of the Sidomulyo health center in Bengkulu city were reviewed from the aspect of the place which included location, building conditions, floors, ceilings, spatial layout, lighting, humidity, sanitation facilities and free from rats, flies and cockroaches in general did not meet the requirements of physical feasibility. temporary waste disposal site. Sanitation of this drinking water depot is also an important thing to note from the results of research at the Koto Kampar 2019 Drinking Water Depot (21).

According to the analysis, the sanitary hygiene of the production environment is an aspect that needs to be considered before establishing a refill drinking water depot. The feasibility of the building as a depot. production site is very important because the building and location of the production environment are supporting factors for the smooth production of drinking water. If the refillable drinking water depot is located around pollution areas, garbage dumps, bushes, and puddles, it will cause various problems such as the presence of disease vectors and others. so that stricter supervision and guidance is needed for depot owners, as well as equipping facilities such as closed trash cans, hand washing facilities and improving the cleanliness of the depot environment.

7. Raw Water Sanitation Hygiene

Based on the results of interviews with health workers, it is known that drinking water depots in the working area of the Siak Hulu health center so far are still quite good and safe, some of which do not meet the requirements. Based on interviews with owners and handlers of drinking water depots, the results of microbiological examinations meet the requirements(22) raw water taken from open springs allows it to be contaminated by the surrounding environment the process of taking raw water from springs to refill drinking water must be carried out using a tank car made from food tera, this is done so that the raw water is not contaminated by microorganisms both from the environment and during the trip.

This research is also in line with (23) The raw water sources from drinking water depots that were declared unqualified drinking water quality because they were positive for coliform and E.coli bacteria were 45% from PDAM raw water sources, 33.3% raw water sources from dug wells, 16.6% raw water sources from drilled wells, 25% raw water sources came from water tankers. There is a significant relationship between poor supervision of drinking water depots and the quality of drinking water that does not meet health requirements

based on environmental quality standards in Jambi City. 15 depots with poor supervision aspects found 10 depots (66.7%) with unqualified drinking water quality and 21 depots with good supervision aspects found 3 depots (14.3%) with unqualified drinking water quality.

The research analysis suggests that raw water sanitation hygiene is very important raw water management using imperfect filtration and disinfection and imperfect packaging and washing of drinking water reservoir salts will result in pollution of the stone source used. Depot owners carry out raw water treatment according to the standard, namely filtration and disinfection which is carried out to produce clean, clear and odorless raw water. So it is necessary to check the quality of raw water sources and drinking water produced periodically according to applicable regulations, pay attention to the hygiene and sanitation of drinking water depots based on established environmental quality standards both from the aspects of the place, equipment, handlers / managers of drinking water depots, raw water sources and supervision by related parties.

8. Lab test results

There are some Depots whose microbiological examination results meet the requirements and some do not meet the requirements if the depot and do not meet the requirements will be given a warning and warning from the Siak Hulu Health Center health officer. Based on interviews with owners and handlers that their depots have met the microbiological requirements. Based on the results of laboratory examinations carried out that all raw water samples there are 3 depots that are free from bacteriology and 2 depots have a total bacterial colony count of *Escherichia coli* more than 0/100 ml of sample with an index of 4-42 from each sample and all water samples at drinking water depots there is 1 drinking water depot that is free from bacteriology and 4 drinking water depots have a total bacterial colony count of *Escherichia coli* more than 0/100 ml of sample with an index of 1-33 from each sample.

This study is in line with research conducted in Koto Kampar sub-district, Riau(24) refillable drinking water depots must be more selective in choosing raw water supply services if necessary, the manager of the refillable drinking water depot can request the results of laboratory tests on the raw water received, especially physical, chemical, and microbiological and attach the laboratory test results in a place that is easily visible. Bacterial examination of refillable drinking water depots aims to determine the presence of these bacteria in food and beverages so that it shows whether or not the food and beverages are contaminated by human feces originating from the human intestine and potentially contain pathogenic bacteria that are harmful to health.

Based on the regulation of the Minister of Health of the Republic of Indonesia No. number 2 of 2023 concerning water quality standards and drinking water quality requirements stipulates that drinking water requirements consist of mandatory parameters not containing *Escherichia coli* bacteria, and coliform bacteria in drinking water. The results of the examination are then categorized into 2, namely unqualified and qualified, called qualified if the *Escherichia coli* content is 0/100 ml of sample (Permenkes No. 492 of 2010) and unqualified if the *Escherichia coli* content is >0/100 ml of sample(25).

The researcher's analysis suggests that the results of this study still have drinking water produced from depots 1, 2, 4 and 5 that do not meet the requirements because the content of *Escherichia coli* >0/100ml samples it happens because the handlers do not behave hygiene and sanitation, consumers do not wash their hands before serving consumers, do not maintain the cleanliness of equipment, the implementation of hygiene and sanitation and the quality of drinking water that is not good when consumed by the public will cause health problems. Therefore, refillable drinking water depot entrepreneurs should further improve personal hygiene, processing methods, serving methods, cleanliness of equipment and the surrounding environment and conduct microbial checks.

CONCLUSIONS

Based on the results of the Drinking Water Depot research and discussion of the sanitary hygiene analysis of drinking water depots in the working area of the Siak Hulu 1 health center, Kampar Regency in 2023, it can be concluded that the regulations or SOPs for processing drinking water in the working area of the Siak Hulu health center have not met the requirements including guidance and supervision of drinking water depots. While the equipment and processing of refillable drinking water depots are quite eligible. Personal hygiene of drinking water depot handlers all do not meet the requirements. The sanitary hygiene of the place in drinking water depots still does not meet health requirements. The sanitary hygiene of raw water and drinking water in water depots has not met the requirements because the results of laboratory tests of

drinking water and raw water quality by testing for the presence of *Escherichia coli* content that all water samples at drinking water depots have a total bacterial colony count of *Escherichia coli* of more than 0/100 ml exceeds the quality standards of drinking water quality requirements.

Health workers, especially puskesmas, must increase the effectiveness of implementing programs and policies in regulations / SOPs so that depots meet sanitary hygiene regulation standards and increase supervision regarding mandatory production permits. Improve supervision of drinking water depot equipment that is not suitable for use. Provide training on equipment hygiene and on the usability of production equipment to depot owners. Increase routine checks at least twice a year so that the quality of drinking water is maintained..

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