

Analysis of Drinking Water Quality in Water Refilled Depot in Dekai Health Primary Yahukimo District

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ABSTRACT

Background: Drinking water needs increase as the population increases. Drinking water provided by refill depots is one alternative to meet drinking water needs and must meet the quality of drinking water that has been determined.

Research Objective: To analysis the quality of water in the Depot of Refill Water in the working area of Dekai District Yahukimo Health Center.

Research Method: Descriptively quantitative and qualitative (mix methods) using observation place, equipment, sanitation facilities, product process, hygiene person and check up drink water quality and then interview with 8 people entrepreneurs and 8 consumers in October - November 2018. Data Analysis used content analysis.

Results: The quality of drinking water at 8 depots in the Dekai Puskesmas health center is eligible by heath ministry of law Indonesia No.492 tahun 2010. Place at 8 refill drinking water depots in the Dekai Health Center working area were 5 depots (62.5%) that met the requirements and did not meet the requirements of 3 depots (37.5%). Equipment at 8 refill drinking water depots in the entire Dekai Community Health Center working area (100%) met the requirements. Sanitation facilities at 8 refill drinking water depots in the Dekai Health Center working area were 3 depots (37.5%) that met the requirements and did not meet the requirements of 5 depots (62.5%). The condition of the processing / production of drinking water at 8 refill drinking water depots in the overall working area of Dekai Health Center (100%) fulfilled the requirements. The hygiene of the staff / employees at 8 refill drinking water depots in the overall working area of Dekai

Health Center (100%) did not meet the requirements. The condition of raw water quality as much as 5 depots (62.5%) met the requirements and as many as 3 depots (37.5%) did not meet the requirements.

Keywords: Quality Drink Water, Refilled Water

INTRODUCTION

Drinking water with a microbiological quality is bad, that is, it contains *E. coli* and Coliform bacteria which will cause health problems for the community because it can cause various diseases. Diarrhea is a disease caused by breast water contaminated with microorganisms and diarrhea is one of the diseases in Indonesia with a high incidence, especially in infants and toddlers (Trisnaini et al, 2018).

The total presence of Coliform bacteria and *E. coli* in refill drinking water produced by Refill Drinking Water Depot (DAMIU) indicates that the water does not meet the drinking water quality requirements in microbiology as stipulated in the Regulation of the Minister of Health of the Republic of Indonesia Number 492 / MENKES / PER / IV / 2010 concerning Quality Requirements for Drinking Water, so that it has the potential to cause health problems to the community / consumers.

The results of research conducted in several regions show that the quality of drinking water produced by Refill Drinking Water Depots (DAMIU) has not met the microbiological requirements, so it is not suitable for consumption. Research

conducted by Wandrivel et al. (2012) on the quality of drinking water produced by Refill Drinking Water Depots in Bangus Subdistrict Padang showed that 55.6% of drinking water depots in Bangus sub-district produce drinking water whose quality does not meet microbiological requirements. The results of the microbiology laboratory tests showed that five out of nine samples contained Coliform bacteria. Three of the five samples containing Coliform turned out to be *Escherichia Coli*. The same study was conducted by Khiki P.Kasim et al (2014) on refillable water depots in the city of Makassar, showing that the results of laboratory tests on 87 samples of refillable drinking water examined were 52.87% contaminated with Coliform bacteria and 22.29% contaminated with *E. coli* bacteria. The results of other studies conducted by Riri N. Sunarti (2016) to test the quality of refill drinking water around UIN Raden Patah Palembang showed that the four samples were not suitable for consumption because of *E. coli* and Coliform bakteri.

Drinking water depots as businesses that produce refill drinking water must ensure that the drinking water produced is safe for consumption. Therefore every drinking water depot must carry out the process of drinking water depot hygiene which includes the factor of place of business, the factor of labor as an operator and the factors of equipment used and the source of raw water to be processed into drinking water. A place that is guaranteed hygiene and sanitation, a healthy and clean / healthy workforce and recommended equipment is safe and raw water from clean water sources and continuous supervision will guarantee the quality of drinking water produced by a healthy and safe Drinking Water Depot (DG P2PL Ministry of Health, 2010; Mallongi, A. 2014, 2016).

The results of the study conducted by Rahayu (2016) in South Purwokerto showed that the place, equipment, behavioral behavior, filter quality and type of disinfectant were factors related to the bacteriological quality of drinking water

produced by drinking water depots. The results of another study conducted by Khiki PK, et al in Makassar City stated that there was a significant relationship between the condition of raw water and officer / employee hygiene with microbial contamination in drinking water refill between the condition of the equipment, processing conditions and sanitary depot conditions with microbial contamination in refill drinking water there is no significant relationship. In contrast to the results of research conducted by Supriyono A, et al (2004) in the city of Semarang which showed a meaningful relationship between the conditions of the drinking water treatment process and sanitation of drinking water depots refill with bacteriological qualities of water refill. The same study by Sondakh, et al. (2015) in the city of Manado concluded that there was a significant relationship between the processing process and depot sanitation hygiene with the quality of the bacteriology of drinking water.

Based on studies on the quality of drinking water as well as factors related to the quality of drinking water produced by refill drinking water depots above, the researchers are interested in conducting a study on "Quality of drinking water at refill depots in the working area of Dekai District Health Center Yahukimo ". As in other regions in Indonesia, Drinking Water produced by refill drinking water depots has also become an alternative for residents in the working area of Dekai District Health Center Yahukimo as one of the sources of potable water. Where the business of drinking water depots is still run in small-scale businesses that sometimes in terms of knowledge and infrastructure are still lacking when compared with health standards so that it can affect the quality of water produced.

2. MATERIALS AND METHODS

2.1 Types of Research

This type of research is quantitative and qualitative research (mix method).

Quantitative research to describe health problems or objects by presenting numerical data results of inspection of drinking water quality (Sugiyono, 2013). According to Syaodih (2008) states that descriptive research is a form of the most basic research. Aimed at natural or human engineering conditions. According to Syaodih (2008) in Pongtiku, et al (2016) that qualitative research is a study aimed at describing and analyzing phenomena, events, social activities, attitudes, beliefs, perceptions, thoughts of individuals individually and in groups ". This type of research is qualitative with a case study approach, namely a method of research conducted with the aim of describing the problem that occurred to objectively draw conclusions (Swarjana, 2013) to determine the quality of drinking water and raw water based on microbiological parameters.

2.2 Scope of Research

This research is only limited to the assessment of places, equipment, sanitation facilities, production processes, employee hygiene and raw water quality, which are thought to be factors that affect the quality of drinking water at refill depots in the working area of the Dekuk Regency Yahukimo Health Center. Determination of the quality of drinking water and raw water quality is limited only to microbiological requirements.

2.3 Location and Time of Research

a. Location

The research was conducted in the working areas of Dekai Kabupaten Yahukimo in drinking water depots in the working area of Dekai District of Yahukimo Health Center with 8 (eight) Refill Drinking Water Depots. The selection of research locations was based on the consideration that in Yahukimo District the new Water Depot was in the area the work of Dekai Kabupaten Yahukimo Health Center. Laboratory testing of microbiological parameters of refill drinking water will be carried out at the Ministry of Health Polytechnic Laboratory in Jayapura.

b. Research Time

This research was conducted from October to November 2018

c. Population, Samples and Informants

1. Population

The population in this study was drinking water as much as 8 drinking water depots, owners or managers of drinking water depot depots as many as 8 people and 8 people from consumers from each of them - each subscription to a refill drinking water depot.

2. Samples

The sample in the study were all refill drinking water depots (8 DAMIU) in the working area of Dekai Yahukimo District Health Center, with the type of sampling being non probability sampling, namely saturated sampling where the sampling technique made all populations as samples, due to the population there are relatively few

3. Informant

The selection of informants was done by using a total sampling technique, namely as many as 8 depot owners / managers and 8 people from consumers who had been subscribed for at least 6 months. The selection of informants based on the involvement of informants who know the problem clearly, can be trusted to be a good source of data and able to express opinions well and correctly (Swarjana, 2013). Informants are sources of information that knows for sure the events or events related to the research variables include the condition of the place, the condition of the equipment, the condition of sanitation, the processing / production of water, the hygiene of the handlers / raw materials and quality of raw water.

3. RESULTS

3.1. Drinking water quality in microbiology

The results of observation and examination of the quality of drinking water from the results of laboratory tests on 8 depots of refill drinking water in the work area of the Puskesmas can be seen in the following table.

Table 1. Distribution of Quality of Drinking Water in Refill Depots in the Working Areas of Dekai Yahukimo District Health Center in 2018

No	Assessment item	Criteria				Total	
		Meet requirement		Not meet requirement		n	%
		f	%	f	%		
1	The Quality of Drinking Water produced meets the microbial requirements according to quality standards or the quality requirements of watermelon (Permenkes RI No.492 / Menkes / Per / IV / 2010)	8	100	0	0	8	100

Table 1 shows that the quality of drinking water from the results of examination from 8 depots is eligible because it does not contain Coliform bacteria and E. coli bacteria or 0/100 CFU / ml.

3.2 Places on the quality of drinking water in Refill Drinking Water Depots

Based on the interview, the informant revealed that the location of the depot was only 4 informants who stated that the

location did not join businesses and residences while 4 other informants joined the business and high-rise homes but it was recognized that the depot building was always cleaned and carried out maintenance. The results of observations of the place at 8 refill drinking water depots in the working area of Dekai Health Center can be seen in table 2

Table 2. Distribution of Refillable Depot Places in the Working Areas of Dekai Yahukimo District Health Center in 2018

No	Item Penilaian	Criteria				Criteria	
		Meet requirement		Not Meet requirement		N	%
		f	%	f	%		
1	Location is free from pollution and disease transmission	4	50	4	50	8	100
2	The building is strong, safe, easy to clean and easy to maintain	5	62,5	3	37,5	8	100
3	Water-resistant flooring, flat surface, smooth not slippery, not cracked, does not absorb dust and is easy to clean, as well as quite sloping land	8	100	0	0	8	100
4	Waterproof walls, flat surface, smooth not slippery, not cracked, does not absorb dust and is easy to clean and bright and bright colors.	5	62,5	3	37,5	8	100
5	Roofs and ceilings must be strong, anti-rat, easy to clean, do not absorb dust, flat surface and brightly colored and have sufficient height	5	62,5	3	37,5	8	100
6	Spatial planning consists of processing, storage, distribution / provision and visitor / consumer waiting rooms	1	12,5	7	87,5	8	100
7	The lighting is quite bright to work, not dazzling and spread evenly	6	75	2	25	8	100
8	Ventilation guarantees good air circulation	4	50	4	50	8	100

Table 2 shows that conditions that meet the requirements of 8 drinking water depots, namely waterproof floor, flat surface, smooth not slippery, not cracked, do not absorb dust and are easy to clean, and slope is quite gentle (100%), while the condition of the place not fulfilling the requirements are 4 depots (50%) free of contamination and disease transmission, watertight walls, flat surface, smooth not slippery, not cracked, not absorbing dust and easy to clean and bright and bright colors of 3 depots (37,5%), the roof and ceiling must be strong, anti-rat, easy to clean, not absorb dust, flat surface and brightly colored and have sufficient height of 3 depots (37.5%), spatial planning consists of processing space, storage, distribution / provision and waiting room for

visitors or consumers as many as 7 depots (87.5%), lighting is bright enough to work, not dazzling and spread evenly as much as 2 depots (25%) and ventilation guarantees per good air circulation / circulation of 4 depots (50%). Based on the results of the recapitulation of criteria meeting the conditions for place conditions on the quality of drinking water can be seen in table 3.

Table 3. Distribution of Refill Depot Sites in the Working Areas of Dekai Yahukimo District Health Center in 2018

No	Places	F	%
1	Meet requirement	5	62,5
2	Not Meet requirement	3	37,5
Number		8	100

The results in table 3 show that the conditions at 8 refill drinking water depots in the Dekai Puskesmas working area were 5 depots (62.5%) that met the requirements

and did not meet the requirements of 3 depots (37.5%).

3.3. Sanitary depot facilities for drinking water quality at Refill Depots

According to the interview with sanitation facilities, according to informants, all depots have access to bathrooms and toilets, although some are homeowners' bathrooms,

rubbish is cleaned every day and is free of rats, flies and cockroaches, but most depots do not have hand washing facilities equipped with running water and soap.

The results of the observation of sanitation facilities at 8 refill drinking water depots in the working area of Dekai Health Center can be seen in the following table.

Table 4. Distribution of Refill Sanitation Depot Facilities in the Working Areas of Dekai Yahukimo District Health Center in 2018

No	Assessment Item	Results				Number	
		Meet requirement		Not Meet requirement		n	%
		f	%	f	%		
1	Have access to a bathroom and toilet	8	100	0	0	8	100
2	There is a sewerage sewer whose flow is smooth and closed	6	75	2	25	8	100
3	There is a closed trash can	2	25	6	75	8	100
4	There is a hand washing place equipped with running water and soap	2	25	6	75	8	100
5	Free of mice, flies and cockroaches	8	100	0	0	8	100

Table 4 shows that sanitation facilities that are eligible for 8 drinking water depots or 100% are having access to bathrooms and latrines and free of rats, flies and cockroaches. Whereas sanitation facilities that do not meet the requirements are there are sewerage channels with 2 depots (25%) flowing smoothly and closed, there are 6 garbage depots that are closed as many as 6 depots (75%) and there are hand washing places equipped with running water and as much soap 6 depots (75%). The results of the recapitulation of criteria to meet the requirements of sanitation facilities for the quality of drinking water can be seen in table 5.

Table 5. Distribution of Refill Sanitation Depot Facilities in the Working Area of Dekai Yahukimo District Health Center in 2018.

No	Sanitation Facilities	n	%
1	Meet requirement	3	37,5
2	Not Meet requirement	5	62,5
Jumlah		8	100

The results in table 5 show that sanitation facilitation in 8 refill drinking water depots in the Dekai Community Health Center working area as many as 3 depots (37.5%) were eligible and did not meet the requirements of 5 depots (62.5%).

3.4. Depot equipment for the quality of drinking water in Refill Drinking Water Depots

Table 6. Distribution of Refill Depot Equipment in the Work Areas of Dekai Yahukimo District Health Center in 2018

No	Assessment Item	Results				Results	
		Meet requirement		Not Meet requirement		n	%
		f	%	f	%		
1	The equipment used is made from food ingredients	8	100	0	0	8	100
2	Microfilter and disinfection equipment are still in use / do not expire	8	100	0	0	8	100
3	The raw water must be covered and protected	6	75	2	25	8	100
4	The container or gallon before filling is carried out cleaning	8	100	0	0	8	100
5	Containers / gallons that have been filled with drinking water must be given directly to consumers and may not be stored in DAM for more than 1 x 24 hours	7	87,5	1	12,5	8	100
6	Doing a back washing system regularly replaces micro filters	8	100	0	0	8	100
7	There is more than one micro filter (μ) with a size of jang	8	100	0	0	8	100
8	There are sterilization equipment, in the form of ultraviolet and / or ozonation and / or other disinfection equipment that functions and is used correctly	8	100	0	0	8	100
9	There are facilities for washing and rinsing bottles (gallons)	8	100	0	0	8	100
10	There is a bottle filling facility in a closed room	8	100	0	0	8	100
11	New clean bottle caps are available	8	100	0	0	8	100

The interviewees explained that the equipment used was still functioning well

and all the informants admitted that replacing the microfilter, washing the filter

by doing backwash and washing the raw water reservoir had been done routinely. Sterilization is available in the form of UV and ozone devices used which are generally lit during working hours but there are 24 hours for sterilization. The observation of equipment at 8 refill drinking water depots in the Puskesmas working area can be seen in the following table 6.

Table 6 shows that equipment that meets the requirements of 8 depots of drinking water or 100% of equipment used is made of food ingredients, microfilter and disinfection equipment still in service / not expired containers or gallons before filling is carried out cleaning, there is more than one micro filter (μ) with the size of a stand, there are sterilization equipment, in the form of ultraviolet and / or ozonation and / or other disinfection equipment that functions and is used correctly, there are bottle washing and rinsing facilities (gallons), there are enclosed and available gallon filling facilities new clean bottle cap, carrying out a back washing system regularly replacing the micro filter. While the condition of equipment that does not meet the requirements, the raw water must be closed and protected as much as 2 depots (25%), the container / gallon that has been filled with drinking water must be directly given to consumers as much as 1 depot (12.5%).

4. DISCUSSION

4.1 Quality of drinking water in microbiology

The results showed that the quality of drinking water at 8 (eight) refill drinking water depots in the working area of the Dekai District of Yahukimo Health Center met microbiological requirements. From the results of laboratory tests / tests using the Most Probable Number (MPN) method in drinking water samples at 8 (eight) depots, no Coliform and E. Coli contents were found in 100 ml / sample of drinking water. This is in accordance with the requirements of drinking water based on microbial parameters that have been stipulated in the

Regulation of the Minister of Health of the Republic of Indonesia Number 492 / MENKES / PER / IV / 2010 concerning Drinking Water Quality Requirements namely the maximum Coliform and E. Coli content allowed in drinking water is 0/100 ml sample. This finding is different from the research conducted by Wandrivel et al. (2012) who found that 5 out of 9 samples contained Coliform and 3 of 5 bacterial samples were E. Coli. Whereas Rosita (2014) research in Tagerang Selatan found that 1 refill drinking water depot was eligible for consumption.

Research conducted by Faith (2016) concluded that the most dominant factor influencing microbiological quality of refill drinking water is equipment and processing. Equipment plays an important role in the process of processing raw water into drinking water, the condition of equipment that is not good will cause non-optimal processing. The less optimal treatment process can cause bacterial contamination. (Suriadi, 2016). Equipment that is functioning properly can kill microorganisms and reduce the content of physical and chemical particles so that the production of the produced drinking water meets the requirements. Effective use of equipment in processing raw water into drinking water is expected to produce good quality drinking water. (Ragsanagara, 2018). The existence of E. coli and coliform in drinking water will cause health problems to the community because it can cause various diseases such as diarrhea and other digestive disorders.

The results of different studies conducted by Rumondor (2014) in several major cities such as Jakarta, Bandung, Medan and Surabaya showed that bacteriological refill drinking water had been contaminated with Coliform bacteria, E. Coli, Salmonella and research conducted by Efriana (2015) in Seberang Hulu Subdistrict stated that 76% of drinking water products produced by DAMIU did not meet health requirements and found Coliform bacteria. This difference can occur

due to geographical location and demography, where Yahukimo District, especially Dekai district, which is the working area of Dekai Health Center, has a relatively low population density as well as the lack of industry as a source of pollution to raw water sources compared to large cities.

Based on the results of interviews with informants as consumers who have subscribed to 8 depots of drinking water for more than 6 months revealed that water consumed in good condition, tasteless and smelly and does not cause effects of diseases such as diarrhea or abdominal pain or inflammation.

4.2 Places on the quality of drinking water in Refill Depots

The results showed that the conditions at 8 depots of refill drinking water in the working area of Dekai Community Health Center were 5 depots (62.5%) that met the requirements and did not meet the requirements of 3 depots (37.5%). conditions that qualify at 8 drinking water depots, namely waterproof floor, flat surface, smooth not slippery, not cracked, do not absorb dust and are easy to clean, and the slope is quite gentle (100%). Based on observations it was found that 7 depots with floors made of ceramics / tiles and 1 depot with plastered floors but did not absorb dust and were easy to clean and no puddles occurred.

The location of the depot must be in an area free from environmental pollution and transmission of disease. And not in areas that are flooded with water and swamps, landfills and garbage, accumulation of used or hazardous and toxic materials (B3) and other areas that are suspected of causing pollution to water. Based on the results of observations in the field, there are depots that do not meet the requirements in terms of location because they are located adjacent to the business of selling timber, as well as joining other businesses and houses, so that it is feared that dust or dirt produced from businesses

and other activities can be a source of pollution. Wandrivel (2012), in the study found a depot that did not stand alone and joined with other activities as much as 44.4%, this allows pollution from the surrounding environment.

Besides that the depot building and its parts must fulfill the requirements as a building that is strong, safe, easy to clean and easy to maintain, does not absorb dust such as plastered brick / brick, waterproof floor, flat surface, smooth not slippery, not cracked, does not absorb dust and is easy to clean, and the slope is quite gentle, watertight walls, flat surface, smooth not slippery, not cracked, does not absorb dust and is easy to clean and bright and bright colors, roof and ceiling must be strong, anti-rat, easy to clean, does not absorb dust, flat surface and brightly colored and has sufficient height, spatial planning consists of processing, storing, distributing or supplying spaces and visitor or consumer waiting rooms, lighting is bright enough to work, not dazzling and spread out equally and ventilation guarantee good circulation / air exchange (Permenkes RI No.43 of 2014).

Based on observations, there are depots with semi-permanent building construction so that they do not meet the requirements as a strong building that is safe, easy to clean and easy to maintain, does not absorb dust such as made of brick / brick plastered. Walls of wooden planks so that it is feared that dust in the air can stick also can absorb water and result in the emergence of moss so that it becomes a source of pollution in drinking water, there is a depot with a ceiling that does not close perfectly and an insufficient height. Besides that most depots do not yet have a spatial plan consisting of processing, storage, division or provision and visitor or consumer waiting rooms, all processes are carried out in one place in the form of glass-insulated cabinets, there is no consumer waiting room to allow consumers to enter depot. There is a depot that does not have ventilation, only the door that opens as an

outlet for air.

The observations were obtained, the depot building was clean and well maintained and based on interviews with informants, routine cleaning and maintenance of the depot building and its parts were routinely carried out. This research is in line with what was done by Walangitan (2016), showing that all of the depots studied were all seen in conditions free from dirt and dust.

One of the factors that affect the quality of drinking water produced by drinking water depots is the building and its parts. This must be maintained and subject to regular and periodic sanitation actions. DAM buildings that are not kept clean are feared that dust in the air can directly pollute drinking water, and if the dust contains germs it can cause pollution and affect the bacteriological quality of processed water. (Suriadi, 2016)

4.3 Sanitation facilities for drinking water quality in Refill Depots

The results of the study showed that sanitation facilities at 8 refill drinking water depots in the Dekai Community Health Center working area were 3 depots (37.5%) that met the requirements and did not meet the requirements of 5 depots (62.5%). The observation that the condition of sanitation facilities that meet the requirements of 8 drinking water depots or 100% is to have access to bathrooms and toilets and are free of rats, flies and cockroaches. Whereas the condition of sanitation facilities that do not meet the requirements is that there are sewerage channels that have a smooth and closed flow of 2 depots (25%), there are 6 garbage depots which are closed (75%) and there are hand wash places equipped with running water and soap as many as 6 depots (75%).

Sanitation facilities, namely accessing bathrooms and toilets, there are SPALs, trash bins, handwashing basins, and free of rodents, flies and cockroaches (Selomo, 2018). Each drinking water depot must have access to basic sanitation facilities for bathrooms and latrines,

sewerage channels whose flow is smooth and closed, trash cans are closed, and hand washing places equipped with running water and soap and must be free of vectors and disease-carrying animals such as flies, mice and cockroaches because they can contaminate and damage equipment. (Permenkes RI, 2014)

The results showed that all refill depots in the Dekai Community Health Center work area had access to bathroom and toilet facilities, and were free of rats, cockroaches and flies, but most did not have closed trash bins and water wash basins. flow and soap. The existence of trash bins that are not closed at depots can potentially be a source of bacterial pollution in drinking water carried by animals such as mice and flies. Besides that, the availability of hand washing facilities with flowing water and soap is important to support the application of good personal hygiene of employees, especially in washing hands before filling the gallons (Trisnaini, 2018).

4.4 Depot equipment for the quality of drinking water in the Refill Depot

The results showed that equipment conditions at 8 refill drinking water depots in the working area of Dekai Community Health Center generally met the requirements. Based on the observation results the condition of equipment that meets the requirements at 8 drinking water depots on the equipment used is made of food ingredients, microfilter and disinfection equipment still in use / does not expire, container or gallon before filling is carried out cleaning, doing a back washing system , periodically replacing microfilter, there are more than one micro filter (μ) with a size in a row, there are sterilization equipment such as ultraviolet and / or ozonation and / or other disinfection equipment that functions and is used correctly, there are facilities for washing and rinsing bottles (gallons), there are facilities filling bottles (gallons) in a closed room and a new clean bottle cap is available.

Equipment plays an important role in processing raw water into drinking water, the condition of equipment that is not good will cause unoptimal processes. Non-optimal processing can cause bacterial contamination (Suriadi et al., 2016). Equipment that functions well can kill microorganisms and reduce the content of physical and chemical particles so that the production produced can meet the requirements. Equipment that is effective in processing raw water into drinking water is expected to produce good quality drinking water. (Ragsanagara et al, 2018).

The condition of equipment that is functioning properly and the maintenance of production equipment carried out routinely at 8 depots of drinking water in the working area of the Dekai Community Health Center have caused the quality of the drinking water produced to meet the requirements. Research conducted by Gafur (2017) in drinking water depots in Panukukang Sub-district, Makassar City, said that depot equipment almost all fulfilled the requirements, which caused the results of drinking water inspection to almost all meet the requirements.

4.5 Processing / production of drinking water to the quality of drinking water in Refill Depots.

The results of the study showed that the conditions of the processing / production of drinking water at 8 refill drinking water depots in the working area of Dekai Yahukimo District Health Center all met the requirements. The condition of the processing / production of drinking water that meets the requirements of 8 depots of drinking water or 100% is a reservoir of raw water made from food ingredients, filtering / filtration process using filter tubes active sand filter media / silica sand, activated carbon and micro tiered filter size, disinfection process using ozone and / or ultraviolet disinfectant and washing / rinsing of containers / containers before filling, filling the container / gallon is done using tools and machines and carried out in a closed and hygienic filling place. However,

on the closing container / gallon item that have been filled with clean new bottle caps, 1 depot has not fulfilled the requirements because it was found still using the old bottle cap then coated with a new bottle cap from the outside with the excuse not to loose.

The processing process is a procedure that must be carried out by the depot entrepreneur to process raw water into drinking water at a refill depot. The process of treating drinking water at refill depots includes raw water storage, filtering / filtering, disinfection and filling. Disinfection aims to kill pathogenic germs in the water to be treated. (Dewanti, 2017). The filtration process functions to separate suspended contamination and separate colloidal mixtures including microorganisms in water. (Walangitan, 2016). Good quality of disinfection will eliminate pathogenic bacteria so that it will improve the quality of refill drinking water, so it is recommended that UV must be on (during) during working hours. The wavelength / irradiation of the new UV lamp will stabilize after being turned on for 30 minutes. (Rahayu, 2013).

The quality of filtration is one of the risk factors for the occurrence of microbiological contamination of DAMIU water products. The quality of filtration that is not good will have an impact on decreasing the quality of refill drinking water. One of the effectiveness of filters is determined by filter size variations, the more varied the filter size the better the quality of the product produced. The filtration process is also not effective when the filter is dirty, if the filter is dirty then the filter must be replaced immediately. Care / maintenance every 1 month the microfilter is opened for cleaning, and every 2 months replace the microfilter with the new one so that the water produced remains of high quality (Rahayu, 2013).

The results of interviews and observations on the conditions of the processing / production at 8 depots in the work area of Dekai Health Center showed

that all depots carried out a filtration / filtration process using filter tubes with active sand filter media / silica sand and activated carbon as well as tiered microfilter, washing of filtration by the method of backwashing and the replacement of microfilter has been done regularly and the 8 depots studied 7 depots use ultraviolet light disinfection and 1 depot uses ultraviolet and ozone disinfection in the processing / production process which all function properly . The research conducted by Wandrivel (2012) in Bungus Padang District based on microbiological requirements of several factors that can affect the quality of water products produced is raw materials, handling of container buyers, operator cleanliness, and depot conditions. 55.6% of depots drink using raw materials originating from Mount Talang, Solok, but the results obtained on microbiological examination show differences, of which 80% show negative results for total Coliform bacteria which means having quality water products, while 20 % showed positive results containing Coliform and E. coli bacteria. The positive results obtained indicate that the effectiveness of processing raw materials into drinking water products might also affect the quality of the water produced. The process referred to here includes storage / storage of raw materials, filtering, disinfection, and sanitation of drinking water treatment facilities or distribution systems on piped water supply, as well as the conditions of the equipment used in the process.

5. CONCLUSIONS

Based on the results of the study it can be concluded as follows:

1. Place in 8 refill drinking water depots in Dekai Puskesmas working area as many as 5 depots (62.5%) that meet the requirements and do not meet the requirements of 3 depots (37.5%). The location of the depot is only 4 locations that do not join businesses and residential houses while the other 4 depots join businesses and high-rise homes

but it is recognized that the depot building is always cleaned and carried out maintenance.

2. Depot sanitation facilities at 8 refill drinking water depots in the Dekai Puskesmas 3 depot (37.5%) working area that meet the requirements and do not meet the requirements of 5 depots (62.5%). All depots have access to bathrooms and toilets although some are homeowners' bathrooms, rubbish is cleaned every day and is free of rats, flies and cockroaches, but most depots do not have hand washing facilities equipped with running water and soap.

3. Equipment at 8 refill drinking water depots in the overall working area of Dekai Health Center (100%) meets the requirements. the equipment used was still functioning well and all informants admitted that replacing the microfilter, washing the filter by doing backwash and washing the raw water reservoir had been done routinely. Sterilization is available in the form of UV and ozone devices used which are generally lit during working hours but there are 24 hours for sterilization.

4. The processing / production of drinking water at 8 refill drinking water depots in the overall working area of Dekai Health Center (100%) fulfill the requirements. All drinking water treatment processes say that filtering is done with tubes of macrofilter and microfilter, before the filled gallons are washed and rinsed first using product water. In addition, the informant said that there was disinfectant tissue that was given to consumers every time they bought a gallon of drinking water. Sterilization is done using UV, one depot uses UV and Ozone.

5. Handler / employee hygiene at 8 refill drinking water depots in the overall working area of Dekai Health Center (100%) did not meet the requirements. all employees are in good health, but there is no routine / periodic health check for employees and none of the employees have taken hygiene and certification courses and generally employees only serve in the packaging process (washing / releasing gallons, filling and delivery).

6. The quality of raw water as much as 5 depots (62.5%) meets the requirements and as many as 3 depots (37.5%) do not meet the requirements. All respondents stated that raw water was sourced from bore wells.

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