LETZTEST

WATER TESTING SOLUTIONS

Member of

German Water Partnership

1 Get Prepared

1. Prepare your workspace (roughly)
2. Create & check your packing list
3. Head out to sampling locations

2

MICROBIOLOGY

E.coli & other coliforms

→ sampling and transportation

2.1 USAGE OF THIO SAMPLE BAGS 100 mL

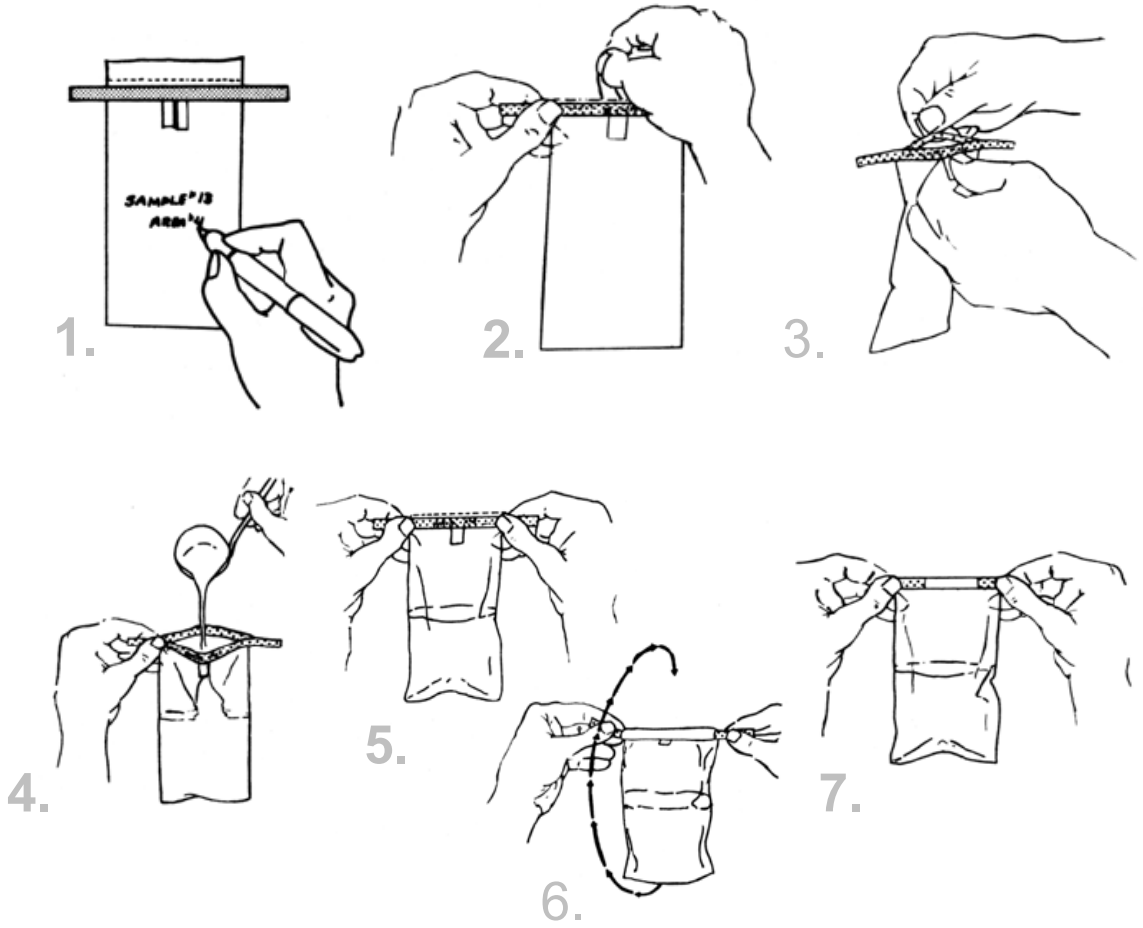
- **Thio sample bags contain thiosulfate to neutralize any residual chlorine**

Labeling:

Sample No./ Description:	
Sampling date & time:	
Sampler:	

2.1 USAGE OF THIO SAMPLE BAGS 100 mL

1. Label sample bag
2. Desinfect your hands and tear the top of the bag along the perforation
3. Use the pull-tabs on each side to open the bag.
4. Fill the sample bag up to the 100 mL mark. Leave enough space at the top for closing and mixing.
5. Pull the ends of the wire to close the bag.
6. Hold the bag by the ends of the thread, twirl the bag three full turns to form a tight seal.
7. Fold the thread on the bag



2.2 SAMPLING

at the point of consumption

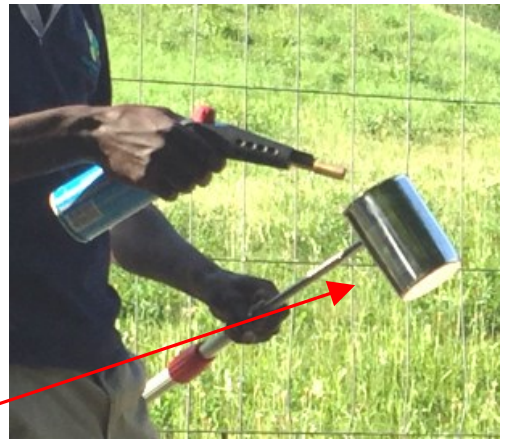
1. Label the sample bag
2. Ask the interviewed person to collect water
   (as he/she does it every day or, in case of different methods, as he/she did the most frequently during the previous week)
3. Disinfect your hands (with 70% ethanol)
4. Fill the sample bag directly from the container that he/she uses to drink and close it immediately
5. Place the sample bag into the ice box

During sampling: Be concentrated, don´t speak, don´t touch the inside of your sample bag !

2.3 SAMPLING

using a liquid sampler (e.g. at the point of storage)

1. Label the sample bag
2. Disinfect your hands (with 70% ethanol)
3. Sterilize a liquid sampler to transport water from the storage container to the sampling bag (use portable bunsen burner)
4. Rinse liquid sampler 1 time with sample water
5. Take the sample with the liquid sampler
6. Fill the sample bag and close immediately
7. Place the sample bag into the ice box



Liquid sampler in stainless steel

During sampling: Be concentrated, don´t speak, don´t touch the inside of your sample bag !

2.4 SAMPLING

at the source

1. Label the sample bag
2. Disinfect your hands (with 70% ethanol)
3. Wipe or spray the end piece as well as its inside with ethanol (70%). If possible, burn it with a bunsen burner. If the fitting does not withstand heat, wait 3 minutes for the ethanol to react.
4. Let the water run for 20 seconds at full power
5. Reduce the water flow by 10 seconds
6. Fill the sample bag and close immediately
7. Place the sample bag into the ice box

During sampling: Be concentrated, don´t speak, don´t touch the inside of your sample bag !

2.5 FIELD BLANK

Why ?

To detect a potential contamination of the sample by the sampler him/herself

How ?

Pour **sterile water** into a sampling bag in the fields (e.g. at the source). Use a liquid sampler if it was used for your samples.

1. Label the sample bag
2. Disinfect your hands (with 70% ethanol)
3. Disinfect the liquid sampler with a portable burner (optional)
4. Transfer sterile water to the sample bag and close it immediately
5. Place the sample bag into the ice box

2.5 TRANSPORTATION & STORAGE

- **Keep samples cold in an ice box (5°C ± 3°C). Make sure samples are not in direct contact with the ice packs.**
- **The day of sampling is the day of analysis !!!**

For *E.coli* and other coliforms, testing needs to take place within 18 hours after sampling.

3

MICROBIOLOGY

E.coli & other coliforms

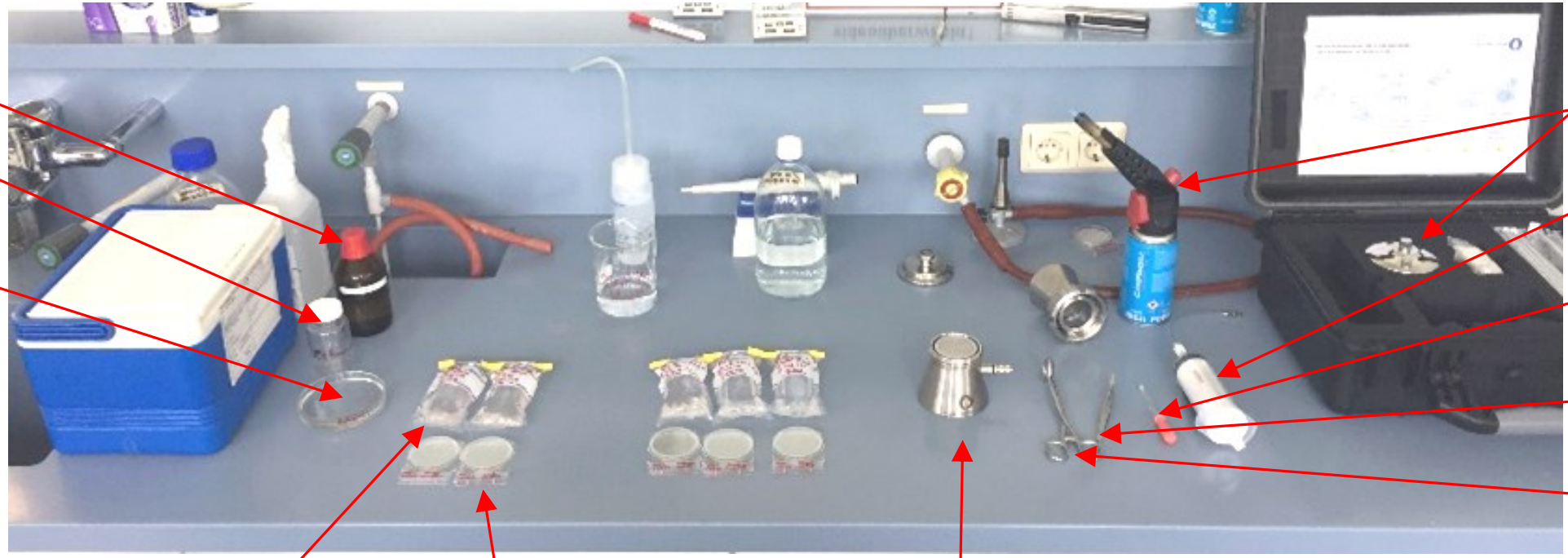
➡ **perform testing**

3.1 ACTIVATE INCUBATOR

1. Place black plates into the sun for activation (when the sun is not shining, pour hot water into the waterproof bag which contains the plates).
2. Wait until the material within the plates is all liquid (~30 min)
3. Place warm plates (37-40°C) into the incubator and close it well.

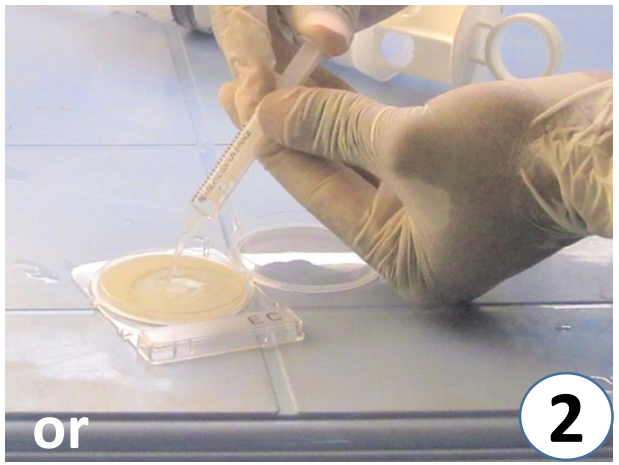
3.1 PREPARE WORKSPACE

1. Disinfect the working surface with ethanol 70% and prepare the workspace



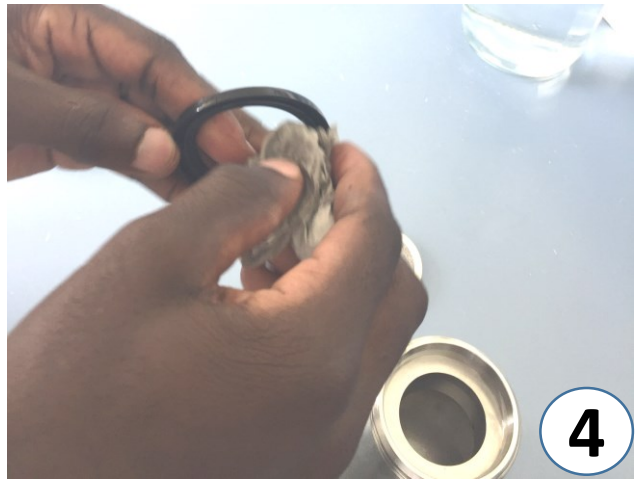
3.2 PREPARE PETRI DISHES

1. Label petri dishes:
   - Sample No. / description
   - Date & time testing
2. **Activate petri dishes with 1 mL of sterile water using sterile equipment** (e.g. a sterile pipette, a sterile syringe or a sterile cylinder). Work close to the candle and close the dishes immediately after activation!



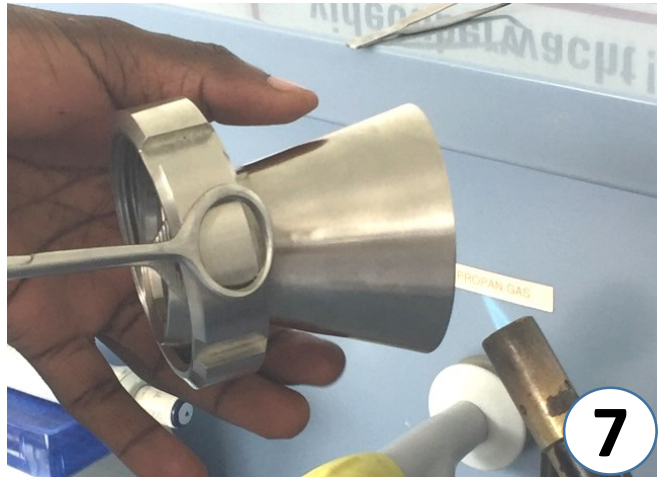
3.3 STERILIZE MF-APPARATUS

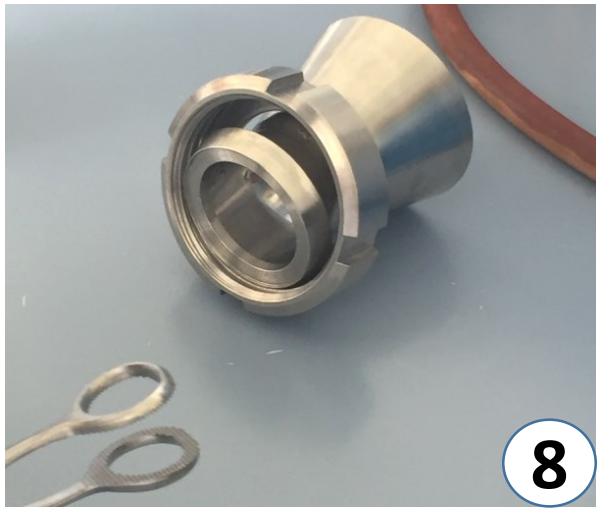
1. Sanitize hands with alcohol
2. Light a laboratory alcohol candle or a bunsen burner near the MF apparatus. The flame is used to directly sterilize your equipment and to keep away contaminants that are in the air
3. Wipe the upper edge of the base part with 70% alcohol to sterilize it
4. Wipe the sealing ring with 70% alcohol and place it into the base part
5. Dip the membrane filter support in 70% alcohol and flame sterilize it. After cooling, place it onto the sealing ring.



3.3 STERILIZE MF-APPARATUS

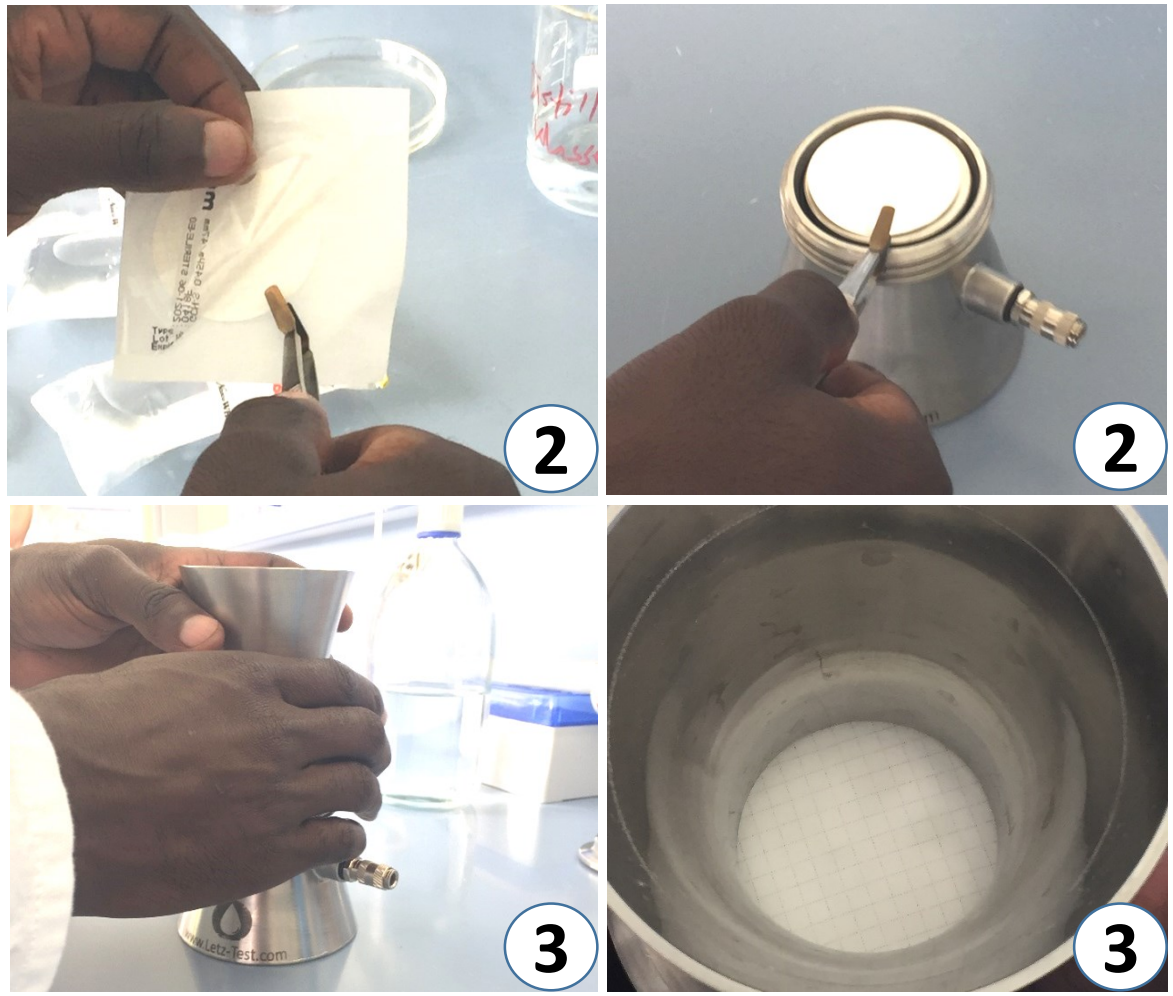
7. Wipe the funnel with 70% alcohol and flame sterilize it.
8. Place it on a sterile surface.





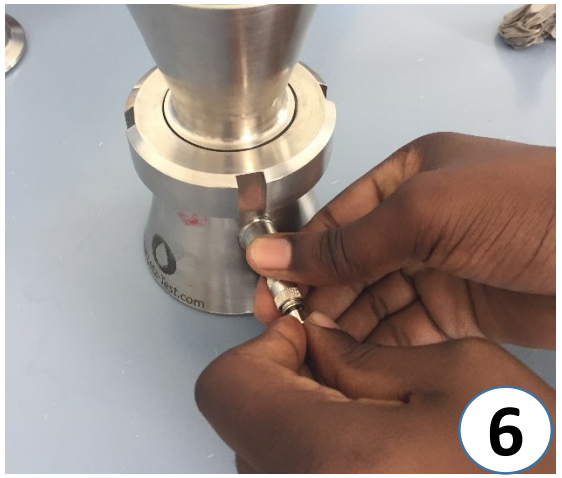
3.4 PERFORM MEMBRANE FILTRATION

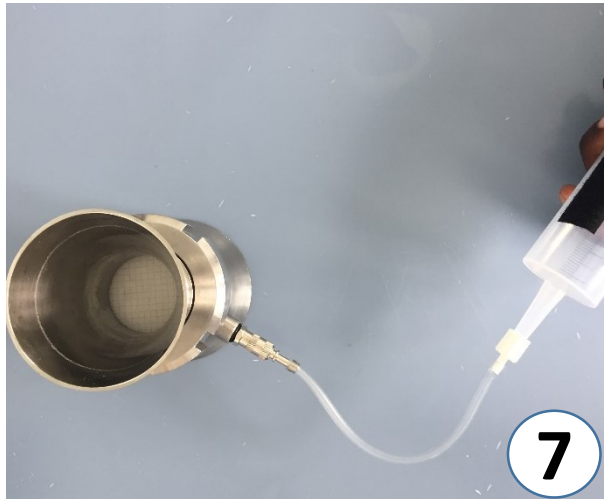
1. Flame-sterilize flat headed tweezers and let them cool down
2. Use sterile tweezers to center a membrane filter, grid side up, on the filter support
3. Connect the funnel and tighten the outer thread. Ensure that the paper membrane is well centered.



3.4 PERFORM MEMBRANE FILTRATION

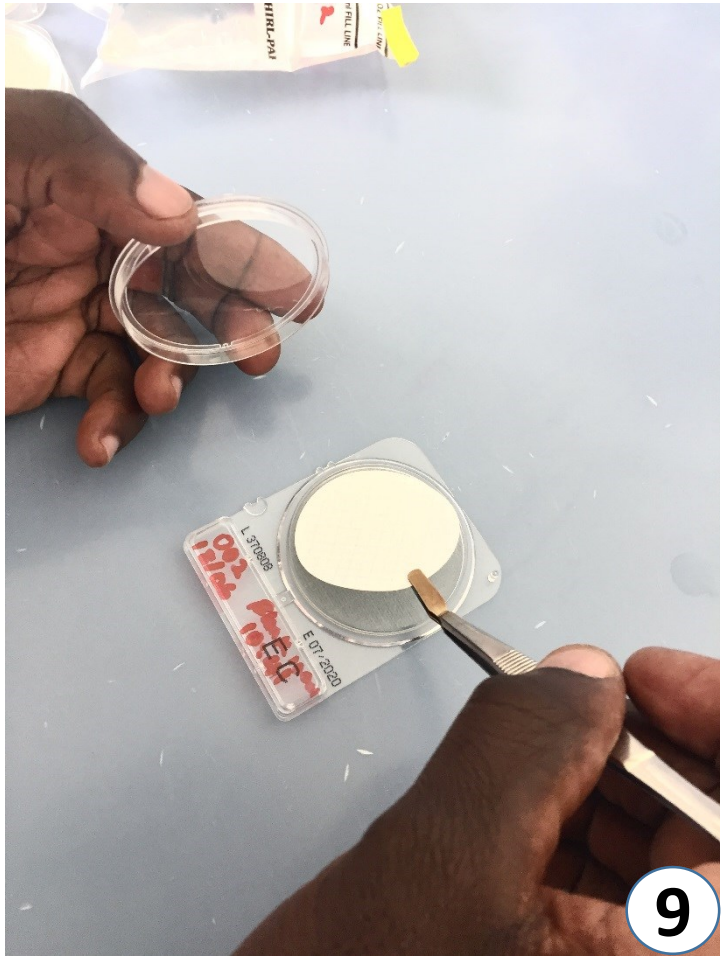
5. Pour the sample into the funnel up to the mark (100 mL).
6. Connect the vacuum syringe
7. Suck the sample through the membrane filter until all the sample has passed plus the membrane is not dripping wet anymore.





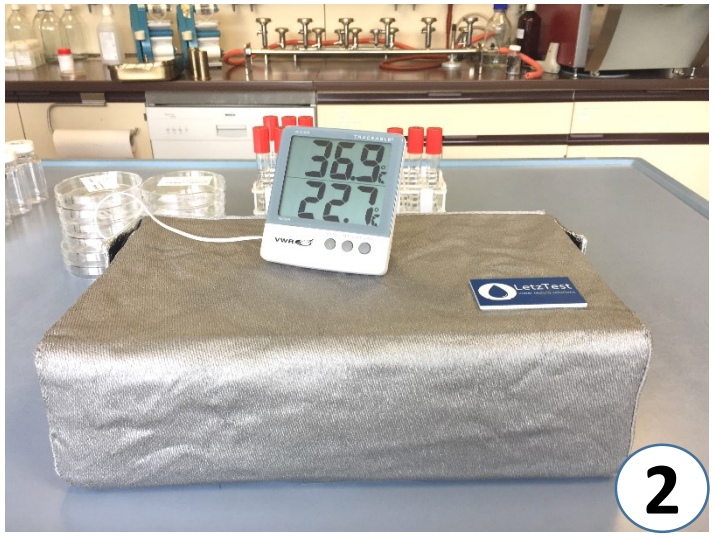
3.4 PERFORM MEMBRANE FILTRATION

8. Remove the funnel
9. Use flame sterilized tweezers to remove the membrane filter and place it into a pre-prepared compact dry plate.
10. Empty MF-APPARATUS.
11. **Start again at 3.3 to filter remaining samples.**



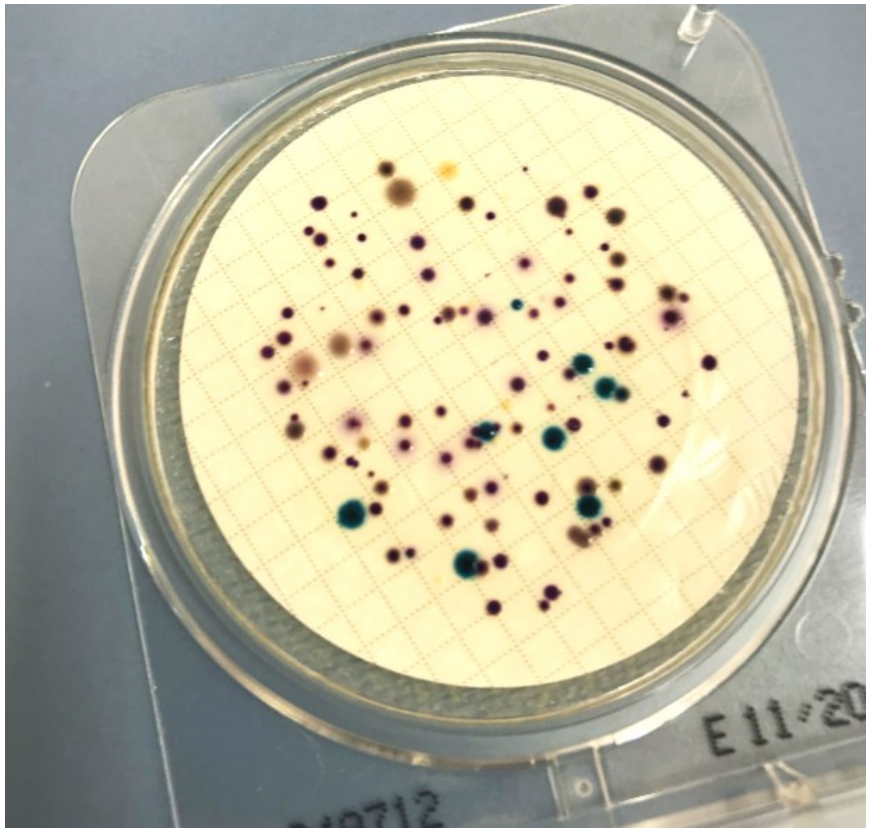
3.5 INCUBATE AT 37°C

1. Place all plates up-side-down into the incubator. Place all plates at once into the incubator to ensure that you do not loose heat
2. Incubate at 37°C for 24h.



3.6 COUNT COLONIES

1. After incubation, count the characteristic colonies:
   ***E. coli* = blue**
   Other coliforms = red to pink
2. You get the most correct results when dishes contain fewer than 200 colonies in total. If they contain more, write “To numerous to count (TNTC)” as the result
3. **Note result on the result sheet.**



KEEP THE DISH CLOSED AS THE BACTERIA CAN BE HARMFULL TO YOUR HEALTH!
<u>DISPOSAL:</u> BURN OR AUTOCLAVE

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