

## LABORATORY NO. 4.

### 4.1. TEST TAKING, PRESERVATION AND CONVEYANCE OF THE WATER SAMPLES

#### 4.1.1. FOR ORGANOLEPTICAL AND PHYSICO-CHEMICAL ANALYSIS

- In the case of tap water:

The tap is cleaned by a clean swab, we must let the water flow 10 minutes, and after this we take a sample of water.

- In the case of well water:

We introduce the bottle 20-30 cm under the water surface.

We fill up the bottle and put the cork.

The volume of collected water is 1 liter for current analysis and 10 liters for special analysis.

We take the samples to the laboratory, where we establish the following properties of the water:

- organoleptic;
- physico-chemic;
- bacteriologic;
- biologic.

#### 4.1.2. FOR BACTERIOLOGICAL EXAMINATION

- In the case of tap water

We sterilise the tap through flame, let the water to flow 10 minutes and put the water in the steril bottle without filling it. We put the cork, and transport the sample to the laboratory in maximum 4 hours.

- In the case of well water

We introduce the sterilised bottle 30 cm under the water surface, and after filling we put the cork and transport the sample to the laboratory in maximum 6 hours.

The sample is accompanied by a label and a report which contains:

- the town or village and the name of the water source;
- the utilisation of the water;
- the moment of the test taking: date and hour of the water filling;
- the required analysis;
- the water temperature at the moment of filling;
- name and the function of the person which took the sample.

For well:

- the well type (public and private);
- the depth;
- sanitary condition of the well building;
- the distance between well and pollution sources;
- if the water turbidity rises after rain;
- meteorological conditions.

For bacteriological examination we need the hidrical epidemiological evolution in this area.

## 4.2. THE QUALITY CONDITIONS OF DRINKING WATER

We need to establish these conditions because of:

- infectious diseases transmitted through drinking water;
- illnesses produced by deficiency or excess of mineral elements in water, or presence of toxic substances.

The quality conditions of drinking water consists in:

- sensorial properties;
- physico-chemical properties;
- bacteriological properties;
- biological properties.

### 4.2.1. SENSORIAL PROPERTIES

Sensorial properties are:

- the taste;
- the smell.

We have 6 grades of smell. There are:

- grade 0 - *without smell* - the specialist doesn't feel the smell;
- grade 1 - *very weak* - the weakest smell (the specialist in water feels a very weak smell);
- grade 2 - *weak smell* - the specialist feels the water smell;
- grade 3 - *perceptible* - the consumer perceives the smell;
- grade 4 - *marked smell* - the consumer perceives the strong smell of the water;
- grade 5 - *strong smell* - the water is impossible to drink.

The scale (degree) for taste is the same.

#### NORMAL VALUE

We admit maximal 2°.

### 4.2.2. PHYSICAL PROPERTIES

#### 4.2.2.1. ESTABLISHING TEMPERATURE

- Water temperature influences directly the human organism:
  - Cold water with a temperature under 5°C produces a diminished local resistance of the organism to the infections or a rised intestinal transit.

There are:

- rhinites;
- synusites;
- pharyngites;
- laringites.
- Warm water with a temperature over 17°C produces nausea and vomiting. This water doesn't satisfy thirst.
- Water temperature shows indirectly the pollution of water of confined water (depth water), that maintains constant its temperature. A variation of its temperature indicates a communication (bind) with the surface of the water.

#### NORMAL VALUES

It is between 7 and 15°C.

#### 4.2.2.2. PH - ESTABLISHMENT is made with pH universal indicator.

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**Normal values:** 6,5-7,4 pH units;

**Exceptional value:** 8,5 pH units.

**4.2.2.3. TURBIDITY ESTABLISHMENT**

Turbidity is due to of the unsolvable character of the substances in water.

Is established through comparison with an artificial scale of  $\text{SiO}_2$  (water with sand).

**NORMAL VALUES**

maximum  $5^0 \text{ SiO}_2/\text{dm}^3$  water;

**EXCEPTIONAL VALUE**

$10^0 \text{ SiO}_2/\text{dm}^3$  water.

**4.2.2.4. COLOR ESTABLISHMENT**

Water color results from the solvable substances in water.

Is established through comparison with an artificial scale of platinum-cobalt.

**NORMAL VALUES**

maximum  $15^0 \text{ color}/\text{dm}^3$  of water;

**EXCEPTIONAL VALUE**

$30^0 \text{ color}/\text{dm}^3$  of water.