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REPORT

REVIEW OF THE EU DRINKING WATER DIRECTIVE REQUIREMENTS ON DRINKING WATER STANDARDS AND MONITORING SYSTEM AND PROPOSED ROADMAP OF ACTIVITIES FOR ARMENIA

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REPORT

REVIEW OF THE EU DRINKING WATER DIRECTIVE REQUIREMENTS ON DRINKING WATER STANDARDS AND MONITORING SYSTEM AND PROPOSED ROADMAP OF ACTIVITIES FOR ARMENIA

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A. BACKGROUND

In 2017 Armenia signed a Comprehensive and Enhanced Partnership Agreement (CEPA) with the EU, where obligations of harmonization with EU water acquis were outlined. CEPA entered into force on March 1, 2021, though its provisional implementation started in June 2018. In the area of water quality and resources management, the following directives are included in CEPA:

- Directive 2000/60/EC establishing a framework for Community action in the field of water policy (Water Framework Directive)
- Directive 91/271/CEE concerning urban wastewater treatment (Urban Wastewater Directive)
- Directive 98/83/EC on the quality of water intended for human consumption (Drinking Water Directive)
- Directive 91/676/CEE concerning the protection of waters against pollution by nitrates from agricultural sources (Nitrates Directive)
- Directive 2007/60/EC on the assessment and management of flood risks (Floods Directive).

Under EUWI+, development of road map was coordinated by the Ministry of Environment, whose main interest was the Water Framework Directive. Thus, the road map has mainly addressed issues related to WFD implementation. Drinking water sector was outside of the coordination of the Ministry of Environment, and thus, was not covered with the 2020 road map.

The Drinking Water Directive, hereinafter "DWD" (more formally DIRECTIVE (EU) 2020/2184 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2020 on the quality of

water intended for human consumption (recast)) concerns the quality of water intended for human consumption and forms part of the regulation of Water supply and sanitation in the European Union.

In general, the Directive:

- Sets quality standards for drinking water quality at the tap (microbiological, chemical and organoleptic parameters) and the general obligation that drinking water must be wholesome and clean,
- Obliges Member States to regular monitoring of drinking water quality and to provide to consumers adequate and up-to-date information on their drinking water quality.
- Member States may exempt water supplies serving less than 50 persons or providing less than 10 m3 of drinking water per day as an average and water in food-processing undertakings where the quality of water cannot affect the wholesomeness of the foodstuff in its finished form.

In the 2020 revised Directive, was introduced new features such as:

- measures to reduce water leakages (art. 4),
- reinforced water quality standards (art. 5),
- preventive risk-based approach to reduce pollution at source (art. 7 to 10),
- harmonized quality standards for materials and products in contact with water (art. 11),
- monitoring of endocrine disruptors, PFAs, and microplastics (art. 13),
- better access to water for vulnerable and marginalised groups (art. 16),
- promotion of tap water in public spaces and restaurants, to reduce (plastic) bottle (art. 16),
- measures to increase transparency (art. 17).

The Directive is intended to protect human health by laying down healthiness and purity requirements, which must be met by drinking water within the EU Community. It applies to all water intended for human consumption apart from natural mineral waters and waters which are medicinal products.

Member States shall ensure that such drinking water: (1) does not contain any concentration of micro-organisms, parasites or any other substance which constitutes a potential human health risk; and (2) meets the minimum requirements (microbiological and chemical parameters and those relating to radioactivity) laid down by the directive; and (3) they will take any other action needed in order to guarantee the healthiness and purity of water intended for human consumption.

In setting contaminant levels the Directive applies the precautionary principle. For example, the EU contaminant levels for pesticides are up to 20 times lower than those in the WHO drinking water guidelines, because the EU directive not only aims at protecting human health but also the environment. The WHO contaminant levels themselves are already set so that there would be no potential risk if the contaminant was absorbed continuously over a person's lifetime.

The Directive requires member states to regularly monitor the quality of water intended for human consumption by using the methods of analysis specified in the directive, or equivalent methods. Member states also have to publish drinking water quality reports every three years,

and the European Commission is to publish a summary report. Since 2003, within five years Member States had to comply with the Directive. Exemptions can be granted on a temporary basis, provided that they do not affect human health.

While translating the Drinking Water Directive into their own national legislation, the Member States of the European Union can include additional requirements e.g. regulate additional substances that are relevant within their territory or set higher standards. But Member States are not allowed to set lower standards as the level of protection of human health should be the same within the whole EU.

Complementing the regular information to consumers, drinking water quality has in three-year cycles to be reported to the European Commission. The Commission assesses the results of water quality monitoring against the standards in the Drinking Water Directive. After each reporting cycle the Commission produces a synthesis report, which summarises the quality of drinking water and its improvement at European level.

According to the CEPA the following provisions apply for Armenia within 4 years of entry into force of the agreement in the context of the Drinking Water Directive, as in its 1998 version[1]:

- Adoption of national legislation and designation of competent authority/ies;
- Establishment of standards for drinking water (art. 4 and 5);
- Establishment of a monitoring system (art. 6 and 7);
- Establishment of a mechanism to provide information to consumers (art. 13).

Some of the new features introduced in the DWD in the 2020 revision are out of the scope of the CEPA (e.g the risk-based approach). While the deadline for implementation of the above-mentioned obligations is March 1, 2025, progress lags in Armenia in terms of harmonization with the requirements of the Drinking Water Directive. Though the country has established national standards for drinking water and conducts regular monitoring, no analysis has been performed yet to check the compliance with the requirements and approaches of the Directive. The same relates to the mechanisms on providing information to consumers, which has been defined by the Public Services Regulatory Commission of Armenia. Development of a specific road map for implementation of the undertaken obligations under the Directive is seen as prerogative and urgent priority.

Thus, this study reviews the Directive with a particular focus on Articles 4 and 5 on establishment of standards for drinking water and Articles 6 and 7 on establishment of a monitoring system, and proposes a road map of activities with timeline for introduction of the requirements of these articles into the context of water quality standards and monitoring system in Armenia.

[1] Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption:

B. DRINKING WATER STANDARDS

According to the law "On ensuring sanitary-epidemiological safety of the population of the Republic of Armenia", Ministry of Health is responsible for safeguarding the sanitary/epidemiological safety of the population. It develops and monitors the implementation of sanitary/epidemiological regulations and standards, including those for the drinking water sector.

The water quality requirements are set by Order of the Minister of Health of the RA - On approving sanitary norms and rules N2-III-A 2-1 ''Drinking water: the hygienic requirements to water quality of centralized water supply systems'', 25 December, 2002, N876, which by law is obligatory to meet for every water supply system in country.

Currently, the established standards are as follows:

Table 1: Drinking water microbiological and parasitological parameters

Parameter	Units of measurement	Norms
Thermotolerant coliform bacteria 1/	Bacteria quantity in 100 ml	Absence
Total coliform bacteria 2/	Bacteria quantity in 100 ml	Absence
Bacteria total amount 2/	Content of colony-forming bacteria in 1 ml	Not more than 50
Coliphages 3/	Content of shield–forming units in 100 ml	Absence
Sulphite-reducing clostridia spores 4/	Content of spores in 20 ml	Absence
Lamblia cysts 3/	Content of cysts in 50 ml	Absence

1/ Triple investigation is carried out for the analysis of 100 ml water sample;

2/ Norms exceeding is not allowed in 95% of samples taken from exterior and interior distributing points of water-supply system during 12 months, in case of analysis of not less than 100 samples, during one year;

3/ Analysis is carried out only in water-supply systems fed by surface water sources, before entering the water-distribution system;

4/ Analysis is carried out for evaluation of technological effectiveness of water treatment.

Table 2: Norms of maximum allowable concentrations of hazardous chemical substances with summarized indices, abundant in natural water and substances of anthropogenic origin

Parameters	Units of measurement	Parameter values or maximum allowable concentration MAC), not more than:	Hazard index	Hazard class 1/
Summarized indices				
Hydrogen ion concentration	pH values	within the limits 6-9		
Total mineralization (solid residue)	mg/l	1000 (1500) 2/		
Total hardness	mmol/l	7,0 (10) 2/		
Permanganate oxidation	mg/l	5.0		
Petroleum products, summarized	mg/l	0,1		
Surface-active substances (SAS), anion-active	mg/l	0.5		
Phenol index	mg/l	0.25		
Inorganic substances				
Aluminum (Al 3+)	mg/l	0.5	s.-t.	2
Barium (Ba 2+)	mg/l	0.1	s.-t.	2
Beryllium (Be 2+)	mg/l	0.0002	s.-t.	1
Boron (B, summarized)	mg/l	0.5	s.-t.	2
Iron (Fe, summarized)	mg/l	0.3 (1.0) 2/	s.d.	3
Cadmium (Cd, summarized)	mg/l	0.001	s.-t.	2
Manganese (Mn, summarized	mg/l	0.1 (0.5) 2/	s.d.	3
Copper (Cu, summarized)	mg/l	1.0	s.d.	3
Molybdenum (Mo, summarized)	mg/l	0.25	s.-t.	2
Arsenic (As, summarized)	mg/l	0.05	s.-t.	2
Nickel (Ni, summarized)	mg/l	0.1	s.-t.	3
Nitrates (by NO-3)	mg/l	45	|s.d.	3
Mercury (Hg, summarized)	mg/l	0.0005	s.-t.	1
Lead (Pb, summarized)	mg/l	0.03	s.-t.	2
Selenium (Se, summarized)	mg/l	0.01	s.-t.	2
Strontium (Sr 2+/)	mg/l	7.0	s.-t.	2
Sulphates (SO4 2-)	mg/l	500	s.d.	4
Fluorides (F-)				
For climatic zones				
-I and II	mg/l	1.5	s.-t.	2
III	mg/l	1.2	s.-t.	2
Chlorides (Cl-)	mg/l	350	s.d.	4
Chromium (Cr 6+)	mg/l	0.05	s.-t.	3
Cyanides (CN-)	mg/l	0.035	s.-t.	2
Zinc (Zn 2+)	mg/l	5.0	s.d.	3
Organic substances	mg/l			
Lindane	mg/l	0.002 3/	s.-t.	1
DDT Total of isomers	mg/l	0.002 3/	s.-t.	2

Parameters	Units of measurement	Parameter values or maximum allowable concentration MAC), not more than:	Hazard index	Hazard class 1/
2,4-D	mg/l	0.03 3/	s.-t.	2

1/ The attribute limiting the hazard of the substance according to which the following standards are determined: s.-t.– sanitary-toxicological, s.d. – sense defining;

2/ The value noted parenthetically can be established by the decision of State Chief Sanitary Doctor of the region, for the water-supply system, reasoning from sanitary anti-epidemiologic situation of the area, as well as from water processing technology;

3/ The values are established in accordance with recommendations of World Health Organization.

Table 3: Value of maximum allowable concentrations of hazardous chemical substances, introduced and originated during drinking water treatment in water-supply systems

Parameters	Units of measurement	Standards of maximum allowable concentration (MAC), not more than:	Hazard index	Hazard class
Chlorine 1/				
- residual free	mg/l	within the limits of 0.3-0.5	s.d.	3
- residual bound	mg/l	within the limits of 0.8-0.12	s.d.	3
Chloroform (in case of water chlorination)	mg/l	0.2 2/	s.-t.	2
Residual ozone 3/	mg/l	0.3	s.d.	
Formaldehyde (in case of water ozone treatment)	mg/l	0.05	s.-t.	2
Polyacrylamide	mg/l	2.0	s.-t.	2
Activated silica-acid (by Si)	mg/l	10	s.-t.	2
Polyphosphate (by PO 4 3-)	mg/l	3.5	s.d.	3
Residual quantities of aluminum and iron containing coagulants	See “aluminum” and “iron” parameters, Annex 2			

1/ In case of water disinfection by free chlorine, its contact with the water should last for not less than 30 minutes, in case of fixed chlorine: not less than 60 minutes. The control of residual chlorine is exercised before water enters the water-distribution network. In case when both free and fixed chlorines are present in water, their total concentration should not exceed 1.2 ml/g. In particular cases higher concentration of chlorine in drinking can be allowed by approbation of Hygiene and Anti-epidemical Inspection center;

2/ The parameter value is established in accordance with proposals of World Health Organization;

3/ The control of residual ozone is exercised after mixing chamber, ensuring a contact for not less than 12 minutes.

Table 4: Drinking water organoleptic parameter values

Parameter	Units of measurement	Values, not more than:
Odor	Points	2
Taste	--"--	2
Coloration	Degrees	20/35/l)
Turbidity	turbidity unit (by formalin) or ml/g (by kaolin)	2.6/35/1) 1.5/2/1) |

The value noted parenthetically can be determined by the decision of State Chief Sanitary Doctor of the region, for the given water-supply system, reasoning from the evaluation of sanitary anti-epidemical situation of the area, as well as from water processing technology.

Table 5: Drinking water radiation safety parameter values

Parameter	Units of measurement	Norms	Hazard index
Total a-radiation activity	Bq/l	0.1	radiation
Total B-radiation activity	Bq/l	1.0	radiation

As for the hygienic values of hazardous substances contained in drinking water, list includes those chemical substances that can be present in drinking water in the mentioned type and can be identified by modern analytical methods.

Chemical substances are arranged in the list corresponding to compositions of organic and inorganic substances. Every subsection presents an extended version of the corresponding section. In the subsections, the substances are arranged according to value increase. Organic acids, including pesticides, are standardized by anion, regardless of the kind this organic acid is presented in the list (as an acid, as its anion, or its salt). Elements and cations, the first point of "inorganic substances" section, are standardized for all degrees of summarized oxidation, unless otherwise mentioned.

The list is arranged in the table (table 6 below) and has the following vertical columns:

1/ The first column presents the most common nominations of chemical substances.

2/ The second column presents the synonyms of chemical substances and some customary nominations.

3/ The third column presents values of MAC and OAL in mg/l, where MAC - maximum allowable concentrations, in case of which substances do not have direct or indirect influence on human health and do not worsen hygienic conditions of water consumption, OAL (marked with an asterisk) - orienting allowable levels that are developed on the basis of toxicological prognosis based on assessment and express–experimental methods.
If “absence” is stated in the column of values, it means that the concentration of this compound in drinking water should not exceed the detectable limit of the applied investigation method.

4/ The fourth column presents the hazard limiting index of the substance, according to which the value is established.

- s-t. – sanitary-toxicological
- s.d. – sense defining, including odor (changes the water odor), color (causes the water coloration), f. (originates foam), fl. (originates film on water surface), taste (imparts taste to water), op. (originates opalescence), trb. (causes turbidity).

5/ The fifth column presents the hazard class of substances:

- 1st class – extremely hazardous
- 2nd class – very hazardous
- 3rd class – hazardous
- 4th class – moderately hazardous.

The base of classification is consisted of those parameters that characterize water pollutant chemical substances that present different degrees of hazard for people, depending on origination property of long-term factor of the identification of toxicological, accumulation, hazard limiting index.

The hazard classes of substances take into consideration:

- In case to choose compounds present in drinking water that are subject of priority control,
- In case to establish the consecution of water protection measures requiring additional financial investments,
- In case to make proposals for substitution of very hazardous substances by less hazardous ones in technological processes,
- In case to determine the priority of selection methods development for analytical control of substances in water.

It should be noted that the hygienic values (MAC) of hazardous substances content in water apply also to water resources used for drinking-economical and recreational purposes and includes a list of over 700 chemicals..

There are certain differences between established Armenian actual standards and standards established by EU Drinking Water Directive. These noncorresponding parameters were identified while analyzing and comparing both legislations. We have chosen to show only parameters from the DWD that were less stringent or absent from the Armenian legislation but not parameters from the Armenian legislation that were absent from DWD (e.g. turbidity, color, barium, beryllium, total a-radiation activity or total b-radiation activity. These are shown in the table 6 below:

Table 6: Noncorresponding parameters in the Armenian and EU standards

No	Parameter	Armenian standard	2020 EU Drinking Water Directive (recast)
1	Taste	2 units	For these indicators no numerical values are assigned, rather it is mentioned hat "they should be acceptable for the consumers and no deterioration should occur"
2	Odor	2 nits	
3	Color	35 degree	
4	Turbidity	2 mg/l by kaolin	
5	Acrylamide	0.01 mg/l	0.10 µg/l
6	Arsenic (As)	0.05 mg/l	10 µg/l
7	Benzene	0.01 mg/l	0.010 µg/l
8	Bor (B)	0.5 mg/l	1.5 mg/l
9	Cadmium (Cd)	0.001 mg/l	5.0 µg/l
10	Copper (Cu)	1.0 mg/l	2.0 mg/l
11	Cyanide (CN)	0.035 mg/l	50 µg/l
12	Lead (Pb)	0.03 mg/l	5 µg/l
13	Nickel (Ni)	0.1 mg/l	20 µg/l
14	Nitrates	0.45 mg/l	50 mg/l
15	Nitrites	3.0 mg/l	0.50 mg/l
16	Mercury (Hg)	0.0005 mg/l	1.0 µg/l
17	Iron (Fe)*	1.0 mg/l	200 µg/l*
	Aluminum (Al)*	0,5 mg/l	200 µg/l*
	Manganese*	0,1 (0,5) mg/l	50 µg/l*
	Selenium	0,01 mg/l	20 µg/l
	Chromium	0,05 mg/l	25 µg/l
	Lead	0,03 mg/l	5 µg/l
	Organic	Lindane (0.002 mg/l), DDT Total of isomers (0.002 mg/l) and 2,4-D (0.03 mg/l)	Pesticides (0.1 µg/l) and Pesticides Total (0.5 µg/l)
	Sulphate*	500 mg/l	250 mg/l*
	Antimony	0,05 mg/l	10 µg/l
	Benzo(a)pyrene	- 0,000005 mg/l	0,010 µg/l
	Bisphenol A	-N/A	2,5 µg/l
	Bromate	N/A	10 µg/l

No	Parameter	Armenian standard	2020 EU Drinking Water Directive (recast)
	Chlorate	N/A	0,25 µg/l
	Chlorite	N/A	0,25 mg/l
	1,2-dichloroethane	- N/A	3,0 µg/l
	Epichlorohydrin	- 0.01 mg/l	0,10 µg/l
	Haloacetic acids (HAAs)	-N/A	60 µg/l
	PFAS Total	Phenol index ? N/A	0,5 µg/l
	Sum of PFAS	N/A	0,1 µg/l
	Polycyclic aromatic hydrocarbons	Contained in Petroleum products, summarized ?	0,1 µg/l
	Tetrachloroethene and Trichloroethene	- 0,2 mg/l N/A	10 µg/l
	Trihalomethanes Total	- N/A	100 µg/l
	Uranium	- N/A	30 µg/l
	Vinyl chloride	- 0,05 mg/l	0,5 µg/l
	Ammonium*	- N/A	0,5 mg/l*
	Chloride*	- 350 mg/l	250 mg/l*
	Conductivity*	- N/A	2 500 µS cm-1 at 20 °C*
	Hydrogen ion concentration*	- N/A	≥ 6,5 and ≤ 9,5 pH units*
	Oxidisability*	- N/A	5,0 mg/l O2*
	Sodium*	- 200,0 mg/l	200 mg/l
	Total organic carbon (TOC)*	- N/A	No abnormal change*

Some parameters of the DWD are indicator parameter (marked with "*" in the table above). These values are used only for monitoring purposes and for the sake of ensuring that, in the event of non-compliance, the authority must consider whether that non-compliance poses any risk to human health and must take remedial action to restore the quality of water intended for human consumption where that is necessary to protect human health.

Conclusions:

While in Armenia the requirements to drinking water quality relate to the water supplied through the water supply network and at the water abstraction points, the monitoring and

risk assessment and management at the watershed are not taking place, while the EU Drinking Water Directive poses such requirements. Thus, Armenia still needs to introduce this process.

Overall, <u>microbiological and parasitological parameters</u> (*Table 1: Drinking water microbiological and parasitological parameters*) are in line with the EU requirements, and do not need to be changed.
The differences between the indicators according to the Armenian and EU standards are summarized in the table above (table 6). In addition to the above list, there are also other differences.

Thus, the Armenian norms envisage also radiological indicators (α and β indicators) before the water enters into the distribution network (table 5), while the EU Directive does not envisage such indicators.

The Armenian norms do not envisage distinct requirements for legionella or lead in the domestic distribution systems, while the EU Directive poses the following requirements for such parameters relevant for the risk assessment of domestic distribution systems:
Legionella: < 1000 CFU/l).
Lead: 10 μg/l

Finally, in order to revise the quality requirements in Armenia it is necessary to perform revisions in the legal framework, while the EU Directive makes it possible to revise the list of indicators or their marginal amounts based on the risk assessment results. Under certain conditions the EU Directive provides possibility to have deviations from the maximum allowable values, while the Armenian norms do not provide such possibility.

It is also important to mention that in Armenia there is one water supplier (Veolia). In 2016 “Veolia”, through its subsidiary “Veolia Djur”, has won the affermage-lease contract for 15-year period (until 2031) for all drinking and wastewater services in Armenia. Under the contract, “Veolia” is entrusted with managing drinking water production and distribution and wastewater treatment facilities, and developing and improving the yield of Armenia’s drinking water network. Among other things, the affermage-lease contract with “Veolia” also includes provisions on the requirements of the water supplied to population.

C. WATER MONITORING SYSTEM

According to existing requirements imposed on the quality of drinking water in the Republic of Armenia (Decree No 876 of the Minister of Health of the Republic of Armenia, 2002) there should be an oversight of the drinking water quality supplied to population by the water supply organization. To perform such monitoring, the water supply organization should develop and approved a working program for production oversight.

The indicators envisaged for production oversight (microbiological, chemical, parasitic and radial) are defined according to population number and water sources type, at the water abstraction sites (groundwater or surface water, Annex 1, 2). In case of identified inconsistencies, the Health and Labor Inspection Body of the Republic of Armenia (hereinafter referred to as Inspection Body), which has supervisory authority and implements measures to eliminate the identified deficiencies.

Table 7: Requirements established for sampling frequency of drinking water for laboratory investigations from water supply undertakings

Parameter	Quantity of samples taken during one year, not less than:	
	For underground water sources	For surface water sources
Microbiological	4 (seasonably)	12 (monthly)
Parasitological	Not taken	-//-
Organoleptic	4 (seasonably)	12 (monthly)
Summarized parameters	-//-	-//-
Inorganic and organic substances	1	4 (seasonably)
Radiological	1	1

Table 8: Requirements established for sampling frequency and quality of samples of drinking water at the points of entry of distribution network

Parameter	Quantity of samples taken during one year, not less than:				
	For underground sources			For surface sources	
	Number of inhabitants, supplied by the given water system, thousand people:				
	Under 20	20-100	Above 100	Under 100	Above 100
Microbiological	50 1/	150 2/	365 3/	365 3/	365 3/
Parasitological	Not taken			12 4/	12 4/
Organoleptic	50 1/	150 2/	365 3/	365 3/	365 3/
Summarized indices	4 4/	6 5/	12 6/	12 6/	24 7/
Inorganic and organic substances	1	1	1	4 4/	12 6/
Parameters concerned with water processing technology	Residual chlorine, residual ozone – not less than once an hour. Other reagents – not less than once a shift.				
Radiological	1	1	1	1	1

The following sampling frequency of water is accepted:

1. weekly
2. thrice a week

3. daily
4. seasonably
5. once two months
6. monthly
7. twice a month

In case if drinking water from water-supply system fed by underground sources and supplied to less than 20 thousand people is not disinfected, analyses by microbiological and sense defining parameters are carried out at least once a month.

Table 9: Frequency of microbiological and organoleptic parameters production control in water-distribution system

Number of inhabitants supplied, thousand people:	Number of samples taken in one month
Under 10	2
10-20	10
20-50	30
50-100	100
Above 100	100 + 1 sample for every 5 thousand inhabitants

Number of samples does not include compulsory samples to be controlled that are taken after repairing the water-supply system or executing other technical activities.

In Armenia drinking water supply and sanitation services are delegated to "Veolia Djur", a subsidiary of "Veolia" under a 15-year lease contract. In 2016 "Veolia Djur" has won the affermage-lease contract (until 2031) for all drinking water supply services in Armenia. Under the contract, "Veolia" is entrusted with managing drinking water production and distribution facilities, and developing and improving the yield of Armenia's drinking water network. While in the service are of "Veolia Djur" the production oversight is being carried out in a regular manner, there are numerous settlements (about 470, mostly rural), the drinking water supply system of which is operated locally, by the communities. These communities do not have necessary capacity (corresponding specialists, machinery and equipment), as well as technical means (laboratory) to implement production oversight. Information on quality of drinking water, supplied in those communities is available only within the framework of monitoring, conducted by the National Centre for Disease Control (NCDC) of the Ministry of Health of Armenia.

In all settlements of Armenia, in addition to the production oversight, independent monitoring is being conducted by the NCDC, taking into consideration the safety observations of the population within the sanitary-epidemiological context.

In order to implement monitoring a special program is designed by the NCDC, which is based on Decree No 876 of the Minister of Health of Armenia (2002). However, taking into consideration that the objective of the program developed includes ensuring sanitary-epidemiological safety, the program is somewhat different from production oversight. Particularly, in case of deficiencies from established norms the monitoring program does not envisage repetition of the sampling. Also, the sampling sites are mainly located close to the daily regulatory reservoirs and water supply network, and the frequency is different from what is required by the norms, and etc.

The indicators, subject to monitoring are the following: microbiological (table 1), and chemical, organoleptic (table 2). In case of deviations, also the following indicators are included: chloride, ammonium nitrogen, nitrite and nitrates, and radial (table 3) indicators. Also, total chemical indicators are included in the head structures and selected sites.

Table 10: Drinking water microbiological and parasitological parameters

Parameter	Units of measurement	Norms
Thermotolerant coliform bacteria 1/	Bacteria quantity in 100 ml	Absence
Total coliform bacteria 2/	Bacteria quantity in 100 ml	Absence
Bacteria total amount 2/	Content of colony-forming bacteria in 1 ml	Not more than 50
Coliphages 3/	Content of shield–forming units in 100 ml	Absence
Sulphite-reducing clostridia spores 4/	Content of spores in 20 ml	Absence
Lamblia cysts 3/	Content of cysts in 50 ml	Absence

1) Triple investigation is carried out for the analysis of 100 ml water sample.
2) Norms exceeding is not allowed in 95% of samples taken from exterior and interior distributing points of water-supply system during 12 months, in case of analysis of not less than 100 samples, during one year.
3) Analysis is carried out only in water-supply systems fed by surface water sources, before entering the water-distribution system.
4) Analysis is carried out for evaluation of technological effectiveness of water treatment.

Table 11: Drinking water organoleptic parameters values

Parameter	Units of measurement	Values, not more than:
Odor	Points	2
Taste	--“--	2
Coloration	Degrees	20/35/l)
Turbidity	turbidity unit (by formalin) or ml/g (by kaolin)	2.6/35/1) 1.5/2/1) |

Table 12: Norms of maximum allowable concentrations of hazardous chemical substances with summarized indices, abundant in natural water and substances of anthropogenic origin

Parameters	Units of measurement	Parameter values or maximum allowable concentration MAC), not more than:	Hazard index	Hazard class 1/
Summarized indices				
Hydrogen ion concentration	pH values	within the limits 6-9		
Total mineralization (solid residue)	mg/l	1000 (1500) 2/		
Total hardness	mmol/l	7,0 (10) 2/		
Permanganate oxidation	mg/l	5.0		
Petroleum products, summarized	mg/l	0,1		
Surface-active substances (SAS), anion-active	mg/l	0.5		
Phenol index	mg/l	0.25		
Inorganic substances				
Aluminum (Al 3+)	mg/l	0.5	s.-t.	2
Barium (Ba 2+)	mg/l	0.1	s.-t.	2
Beryllium (Be 2+)	mg/l	0.0002	s.-t.	1
Boron (B, summarized)	mg/l	0.5	s.-t.	2
Iron (Fe, summarized)	mg/l	0.3 (1.0) 2/	s.d.	3
Cadmium (Cd, summarized)	mg/l	0.001	s.-t.	2
Manganese (Mn, summarized	mg/l	0.1 (0.5) 2/	s.d.	3
Copper (Cu, summarized)	mg/l	1.0	s.d.	3
Molybdenum (Mo, summarized)	mg/l	0.25	s.-t.	2
Arsenic(As, summarized)	mg/l	0.05	s.-t.	2
Nickel (Ni, summarized)	mg/l	0.1	s.-t.	3
Nitrates (by NO-3)	mg/l	45	|s.d.	3
Mercury (Hg, summarized)	mg/l	0.0005	s.-t.	1
Lead (Pb, summarized)	mg/l	0.03	s.-t.	2
Selenium (Se, summarized)	mg/l	0.01	s.-t.	2
Strontium (Sr 2+/)	mg/l	7.0	s.-t.	2
Sulphates(SO4 2-)	mg/l	500	s.d.	4
Fluorides(F-)				
For climatic zones				
-I and II	mg/l	1.5	s.-t.	2
III	mg/l	1.2	s.-t.	2
Chlorides (Cl-)	mg/l	350	s.d.	4
Chromium (Cr 6+)	mg/l	0.05	s.-t.	3
Cyanides (CN-)	mg/l	0.035	s.-t.	2
Zinc (Zn 2+)	mg/l	5.0	s.d.	3
Organic substances	mg/l			
Lindane	mg/l	0.002 3/	s.-t.	1
DDT Total of isomers	mg/l	0.002 3/	s.-t.	2
2,4-D	mg/l	0.03 3/	s.-t.	2

1/ The property limiting the hazard of the substance according to which the following standards are determined: s.-t.– sanitary-toxicological, s.d. – sense defining;

2/ The value noted parenthetically can be established by the decision of State Chief Sanitary Doctor of the region, for the water-supply system, reasoning from sanitary anti-epidemiologic situation of the area, as well as from water processing technology;

3/ The values are established in accordance with proposals of World Health Organization.

The identified irregularities are immediately presented to the Inspection Body in order to undertake corresponding measures. On a monthly and semi-annually basis the analysis is performed to the Water Committee of the Ministry of Territorial Administration and Infrastructures, in order to eliminate the identified deficiencies.

The existing production oversight and monitoring is different from the requirements of the E U Drinking Water Directive. Particularly, this relates to permanent monitoring indicators (mostly chemical ones), their allowable quantities, sampling frequencies based on the risk approach, as well as supplied water volume and etc.

Particularly, the 2020 Directive (recast) imposes the following:

Table 13: Microbiological parameters

Parameter	Parametric value	Unit	Notes
Intestinal enterococci	0	number/100 ml	For water put into bottles or containers, the unit is number/250 ml.
Escherichia coli (E. coli)	0	number/100 ml	For water put into bottles or containers, the unit is number/250 ml.

Table 14: Chemical parameters

Parameter	Parametric value	Unit	Notes
Acrylamide	0,10	µg/l	The parametric value of 0,10 µg/l refers to the residual monomer concentration in the water as calculated according to specifications of the maximum release from the corresponding polymer in contact with the water.
Antimony	10	µg/l	
Arsenic	10	µg/l	
Benzene	1,0	µg/l	
Benzo(a)pyrene	0,010	µg/l	
Bisphenol A	2,5	µg/l	
Boron	1,5	mg/l	A parametric value of 2,4 mg/l shall be applied when desalinated water is the predominant water source of the supply system concerned or in regions where geological conditions could lead to high levels of boron in groundwater.
Bromate	10	µg/l	

Parameter	Parametric value	Unit	Notes
Cadmium	5,0	µg/l	
Chlorate	0,25	mg/l	A parametric value of 0,70 mg/l shall be applied where a disinfection method that generates chlorate, in particular chlorine dioxide, is used for disinfection of water intended for human consumption. Where possible, without compromising disinfection, Member States shall strive for a lower value.
Chlorite	0,25	mg/l	A parametric value of 0,70 mg/l shall be applied where a disinfection method that generates chlorite, in particular chlorine dioxide, is used for disinfection of water intended for human consumption. Where possible, without compromising disinfection, Member States shall strive for a lower value. This parameter shall be measured only if such disinfection methods are used.
Chromium	25	µg/l	The parametric value of 25 µg/l shall be met, at the latest, by 12 January 2036. The parametric value for chromium until that date shall be 50 µg/l.
Copper	2,0	mg/l	
Cyanide	50	µg/l	
1,2-	3,0	µg/l	
Epichlorohydrin	0,10	µg/l	The parametric value of 0,10 µg/l refers to the residual monomer concentration in the water as calculated according to specifications of the maximum release from the corresponding polymer in contact with the water.
Fluoride	1,5	mg/l	
Haloacetic acids (HAAs)	60	µg/l	This parameter shall be measured only when disinfection methods that can generate HAAs are used for the disinfection of water intended for human consumption. It is the sum of the following five representative substances: monochloro-, dichloro-, and trichloro-acetic acid, and mono- and dibromo-acetic acid.
Lead	5	µg/l	The parametric value of 5 µg/l shall be met, at the latest, by 12 January 2036. The parametric value for lead until that date shall be 10 µg/l.
			After that date, the parametric value of 5 µg/l shall be met at least at the point of supply to the domestic distribution system. For the purposes of point (b) of the first subparagraph of Article 11(2), the para- metric value of 5 µg/l at the tap shall apply.
Mercury	1,0	µg/l	

Parameter	Parametric value	Unit	Notes
Microcystin-LR	1,0	µg/l	This parameter shall be measured only in the event of potential blooms in source water (increasing cyanobacterial cell density or bloom forming potential).
Nickel	20	µg/l	
Nitrate	50	mg/l	Member States shall ensure that the condition [nitrate]/50 + [nitrite]/3 ≤ 1, where the square brackets signify the concentrations in mg/l for nitrate (NO3) and nitrite (NO2), is complied with and that the parametric value of 0,10 mg/l for nitrites is complied with ex water treatment works.
Nitrite	0,50	mg/l	Member States shall ensure that the condition [nitrate]/50 + [nitrite]/3 ≤ 1, where the square brackets signify the concentrations in mg/l for nitrate (NO3) and nitrite (NO2), is complied with and that the parametric value of 0,10 mg/l for nitrites is complied with ex water treatment works.
Pesticides	0,10	µg/l	'Pesticides' means: organic insecticides, organic herbicides, organic fungicides, organic nematocides, organic acaricides, organic algicides, organic rodenticides organic slimicides, related products (inter alia, growth regulators), and their metabolites as defined in point (32) of Article 3 of Regulation (EC) No 1107/2009 of the European Parliament and of the Council (1), that are considered relevant for water intended for human consumption. A pesticide metabolite shall be deemed relevant for water intended for human consumption if there is reason to consider that it has intrinsic properties comparable to those of the parent substance in terms of its pesticide target activity or that either itself or its transformation products generate a health risk for consumers.
			The parametric value of 0,10 µg/l shall apply to each individual pesticide. In the case of aldrin, dieldrin, heptachlor and heptachlor epoxide, the parametric value shall be 0,030 µg/l. Member States shall define a guidance value to manage the presence of non-relevant

Parameter	Parametric value	Unit	Notes
			metabolites of pesticides in water intended for human consumption. Only pesticides which are likely to be pre- sent in a given supply need to be monitored. Based on the data reported by Member States, the Commission may establish a database of pesticides and their relevant metabolites taking into account their possible presence in water intended for human consumption.
Pesticides Total	0,50	µg/l	'Pesticides Total' means the sum of all individual pesticides, as defined in the previous row, detected and quantified in the monitoring procedure.
PFAS Total	0,50	µg/l	'PFAS Total' means the totality of per- and polyfluoroalkyl substances. This parametric value shall only apply once technical guidelines for monitoring this parameter are developed in accordance with Article 13(7). Member States may then decide to use either one or both of the parameters 'PFAS Total' or 'Sum of PFAS'.
Sum of PFAS	0,10	µg/l	'Sum of PFAS' means the sum of per- and polyfluoroalkyl substances considered a concern as regards water intended for human consumption listed in point 3 of Part B of Annex III. This is a subset of 'PFAS Total' substances that contain a perfluor- oalkyl moiety with three or more carbons (i.e. –CnF2n–, n ≥ 3) or a perfluoroalky- lether moiety with two or more carbons (i. e. –CnF2nOCmF2m–, n and m ≥ 1).
Polycyclic aromatic hydrocarbons	0,10	µg/l	Sum of concentrations of the following specified compounds: benzo(b)fluoranthene, benzo(k)fluoranthene, benzo (ghi)perylene, and indeno(1,2,3-cd)pyrene.
Selenium	20	µg/l	A parametric value of 30 µg/l shall be applied for regions where geological conditions could lead to high levels of selenium in groundwater.
Tetrachloroethene and Trichloroethene	10	µg/l	The sum of concentrations of these two parameters.
Trihalomethanes Total	100	µg/l	Where possible, without compromising disinfection, Member States shall strive for a lower parametric value. It is the sum of concentrations of the following specified compounds: chloroform, bromoform, dibromochloromethane and bromodichloromethane.
Uranium	30	µg/l	

Parameter	Parametric value	Unit	Notes
Vinyl chloride	0,50	µg/l	The parametric value of 0,50 µg/l refers to the residual monomer concentration in the water as calculated according to specifications of the maximum release from the corresponding polymer in contact with the water.

([1]) Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC (OJ L 309, 24.11.2009, p. 1).

Table 15: Indicator parameters

Parameter	Parametric value	Unit	Notes
Aluminum	200	µg/l	
Ammonium	0,50	mg/l	
Chloride	250	mg/l	The water should not be corrosive.
Clostridium perfringens including spores	0	number/100 ml	This parameter shall be measured if the risk assessment indicates that it is appropriate to do so.
Colour	Acceptable to consumers and no abnormal change	µS cm^{-1} at 20 °C	The water should not be aggressive.
Conductivity	2 500	µS cm-1 at 20 °C	The water should not be aggressive.
Hydrogen ion concentration	≥ 6,5 and ≤ 9,5	pH units	The water should not be aggressive. For still water put into bottles or contain- ers, the minimum value may be reduced to 4,5 pH units. For water put into bottles or containers which is naturally rich in or artificially enriched with carbon dioxide, the minimum value may be lower.
Iron	200	µg/l	
Manganese	50	µg/l	
Odour	Acceptable to consumers and no abnormal change		
Oxidisability	5,0	mg/l O_2	This parameter need not be measured if the parameter TOC is analysed.
Sulphate	250	mg/l	The water should not be corrosive.
Sodium	200	mg/l	
Taste	Acceptable to consumers and no abnormal change		
Colony count 22° C	No abnormal change		
Coliform bacteria	0	number/100 ml	For water put into bottles or containers, the unit is number/250 ml.

Parameter	Parametric value	Unit	Notes
Total organic carbon (TOC)	No abnormal change		This parameter need not be measured for supplies of less than 10 000 m^3 a day.
Turbidity	Acceptable to consumers and no abnormal change		

Although the Directive does not set out parametric values on radioactivity, the following specific arrangements for the monitoring of radioactive substances in water intended for human consumption are laid down by Directive 2013/51/Euratom:

Table 16: Radiological parameters[2]

Parameter	Parametric value	Unit	Notes
Radon	100	Bq/l	
Tritium	100	Bq/l	
Indicative Dose	0,10	mSv	

Water should not be aggressive or corrosive. This applies particularly to water undergoing treatment (demineralization, softening, membrane treatment, reverse osmosis, etc.).

Where water intended for human consumption is derived from treatment that significantly demineralizes or softens water, calcium and magnesium salts could be added to condition the water in order to reduce any possible negative health impact, as well as to reduce the corrosiveness or aggressivity of water and to improve taste. Minimum concentrations of calcium and magnesium or total dissolved solids in softened or demineralized water could be established taking into account the characteristics of water that enters those processes.

Since Armenian norms do not envisage distinct requirements for legionella or lead in domestic distribution systems, there is no request to perform risk assessment of domestic distribution systems, while EU Directive requests to perform risk assessment of domestic distribution systems.

Conclusions:

Currently, in the water captation points and head structures the monitoring is being implemented by the organization in charge of operation of drinking water supply system, while in the self-supplied communities, which are outside of the service area of these companies, no such monitoring is performed.

In order to introduce in Armenia the indicators and research methods which are subject to obligatory monitoring, as indicated in the tables above it is necessary to perform a detailed assessment on the existing laboratory system, including methods, equipment, capacity and

[2] Council Directive 2013/51/ EURATOM dated 22 October 2013 laying down requirements for the protection of the health of the general public with regard to radioactive substances in water intended for human consumption

knowledge. According to the results of the assessment laboratories capacity should be enhanced by equipping with the necessary equipment, reagents, etalons, training of the personnel and implementing the methods required by Directive and standards ,as well as quality assurance.

D. FOCUS ON DWD 2020 (RECAST)'S REQUIREMENTS

The Comprehensive and Enhanced Partnership Agreement (CEPA) signed between the Republic of Armenia and the EU strictly focuses its obligations of harmonization with the Directive 98/83/EC on the quality of water intended for human consumption.

On the 16 December 202, EU Parliament adopted the Directive 2020/2184 on the quality of water intended for human consumption (recast). This new DWD being adopted after the signature of the CEPA but before the CEPAS's entry into force, the consultants proposed to investigate whether this new Directive would have an impact the establishment of standards for drinking water and monitoring system in Armenia.

The following paragraphs are presenting a summary of the additional provisions that may have an impact on the approximation of Armenian legislation to the EU acquis although not all of them are directly affecting standards and monitoring of drinking water. The objectives of the 2020 Directive were to recast the 1998 Directive to modernize and update the existing provisions but also to enlarge the scope to new following topics. Among the upgraded or newly addressed topics, several articles have a major direct impact on Armenia's standards and monitoring.

- **Reinforcement of water quality standards (art. 5)**
- **Introducing a preventive risk-based approach to reduce pollution at source (art. 7 to 10)**
- **Harmonization quality standards for materials and products in contact with water (art. 11)**
- **The monitoring of endocrine disruptors, PFAs, and microplastics (art. 13)**

The provisions of all the articles impacting water quality standards and monitoring are reproduced in the following table.

Table 17: Provisions of the recasted EU DWD (Directive 2020/2184) impacting water quality standards and monitoring

Article recasted EU DWD	Full Provisions EU DWD (Directive 2020/2184)
5. (Quality standards)	1.Member States shall set values applicable to water intended for human consumption for the parameters set out in Annex I. 2.The parametric values set pursuant to paragraph 1 of this Article shall not be less stringent than those set out in Parts A, B, C and D of Annex I. As regards the parameters set out in Part C of Annex I, the values shall be set only for monitoring purposes and for the sake of ensuring that the requirements set out in Article 14 are met. 3.A Member State shall set values for additional parameters not included in Annex I, where the protection of human health within its national territory or part of it so requires. The values set shall, as a minimum, satisfy the requirements of point (a) of Article 4(1).
7 (Risk-based approach for water safety)	1.Member States shall ensure that the supply, treatment and distribution of water intended for human consumption is subject to a risk-based approach that covers the whole supply chain from the catchment area, abstraction, treatment, storage and distribution of water to the point of compliance specified in Article 6. **The risk-based approach shall entail the following elements:** **(a) risk assessment and risk management of the catchment areas for abstraction points of water intended for human consumption in accordance with Article 8;** **(b) risk assessment and risk management for each supply system that includes the abstraction, treatment, storage and distribution of water intended for human consumption to the point of supply carried out by the water suppliers in accordance with Article 9; and** **(c) risk assessment of the domestic distribution systems in accordance with Article 10.** 2.Member States may adapt the implementation of the risk-based approach, without compromising the objective of this Directive concerning the quality of water intended for human consumption and the health of consumers, when there are particular constraints due to geographical circumstances such as remoteness or limited accessibility of the water supply zone. 3.Member States shall ensure that there is a clear and appropriate distribution of responsibilities between stakeholders, as defined by the Member States, for the implementation of the risk-based approach. Such distribution of responsibilities shall be tailored to their institutional and legal framework. 4.The risk assessment and risk management of the catchment areas for abstraction points of water intended for human consumption shall be carried out for the first time by 12 July 2027. That risk assessment and risk management shall be reviewed at regular intervals of no longer than six years, taking account of the requirements provided for in Article 7 of Directive 2000/60/EC, and updated where necessary. 5.The risk assessment and risk management of the supply system shall be carried out for the first time by 12 January 2029. That risk assessment and risk management shall be reviewed at regular intervals of no longer than six years, and updated where necessary. 6.The risk assessment of the domestic distribution systems shall be carried out for the first time by 12 January 2029. That risk assessment shall be reviewed every six years, and updated where necessary. 7.The deadlines specified in paragraphs 4, 5 and 6 shall not prevent Member States from ensuring that measures are taken as soon as possible once risks are identified and assessed.
8. (Risk assessment and risk management	1. Without prejudice to Articles 4 to 8 of Directive 2000/60/EC, Member States shall ensure that risk assessment and risk management of the catchment areas for abstraction points of water intended for human consumption are carried out. 2. Member States shall ensure that the risk assessment includes the following elements:

Article recasted EU DWD	Full Provisions EU DWD (Directive 2020/2184)
of the catchment areas for abstraction points of water intended for human consumption)	(a) characterisation of the catchment areas for abstraction points including: (i) identification and mapping of the catchment areas for abstraction points; (ii) mapping of the safeguard zones, where those zones have been established in accordance with Article 7(3) of Directive 2000/60/EC; (iii) geo-references for all abstraction points in the catchment areas; given that those data are potentially sensitive, in particular in the context of public health and public security, the Member States shall ensure that such data are protected and communicated only to the relevant authorities and water suppliers; (iv) description of land-use, runoff, and recharge processes in the catchment areas for abstraction points; (b) identification of hazards and hazardous events in the catchment areas for abstraction points and an assessment of the risk they could pose to the quality of water intended for human consumption; that assessment shall assess potential risks that might cause deterioration of the water quality to the extent that it could constitute a risk to human health; (c) appropriate monitoring in surface water or groundwater, or both, in the catchment areas for abstraction points, or in raw water, of relevant parameters, substances or pollutants selected from the following: (i) parameters in Parts A and B of Annex I or set in accordance with Article 5(3) of this Directive; (ii) groundwater pollutants in Annex I to Directive 2006/118/EC of the European Parliament and of the Council (28), and pollutants and indicators of pollution for which threshold values have been established by Member States in accordance with Annex II to that Directive; (iii) priority substances and certain other pollutants in Annex I to Directive 2008/105/EC of the European Parliament and of the Council (29); (iv) river basin specific pollutants established by Member States in accordance with Directive 2000/60/EC; (v) other pollutants relevant for water intended for human consumption established by Member States on the basis of the information collected in accordance with point (b) of this subparagraph; (vi) naturally occurring substances that could constitute a potential danger for human health through use of water intended for human consumption; (vii) substances and compounds included in the watch list as established in accordance with Article 13(8) of this Directive. For the purposes of point (a) of the first subparagraph, Member States may use information collected in accordance with Articles 5 and 7 of Directive 2000/60/EC. For the purposes of point (b) of the first subparagraph, Member States may use the review of the impact of human activity undertaken in accordance with Article 5 of Directive 2000/60/EC and information on significant pressures collected in accordance with points 1.4, 1.5 and 2.3 to 2.5 of Annex II to that Directive. Member States shall select from points (c)(i) to (c)(vii) of the first subparagraph the parameters, substances or pollutants that are considered relevant for monitoring in light of the hazards and hazardous events identified under point (b) of the first subparagraph or in light of the information provided by the water suppliers in accordance with paragraph 3. For the purpose of appropriate monitoring as referred to in point (c) of the first subparagraph, including to detect new substances that are harmful to human health through use of water intended for human consumption, Member States may use the monitoring performed in accordance with Articles 7 and 8 of Directive 2000/60/EC or other Union legislation and relevant to the catchment areas for abstraction points. 3. Water suppliers that perform monitoring in the catchment areas for abstraction points or in raw water shall be required to inform the competent authorities of trends in, and of unusual numbers or concentrations of, monitored parameters, substances or pollutants. 4. On the basis of the outcome of the risk assessment carried out in accordance with paragraph 2, Member States shall ensure that the following risk management measures to prevent or control the risks identified are taken as relevant, starting with the preventive measures: (a) defining and implementing preventive measures in the catchment areas for abstraction points in addition to the measures foreseen or taken in accordance with point (d) of Article 11(3) of Directive 2000/60/EC, where required to safeguard the quality of the water intended for human consumption; where appropriate, those preventive measures shall be included in the programmes of measures referred to in Article 11 of that Directive; where appropriate, Member States shall ensure that polluters, in cooperation with water suppliers and other relevant stakeholders, take such preventive measures in accordance with Directive 2000/60/EC;

Article recasted EU DWD	Full Provisions EU DWD (Directive 2020/2184)
	(b) defining and implementing mitigation measures in the catchment areas for abstraction points in addition to the measures foreseen or taken in accordance with point (d) of Article 11(3) of Directive 2000/60/EC, where required to safeguard the quality of the water intended for human consumption; where appropriate, those mitigation measures shall be included in the programmes of measures referred to in Article 11 of that Directive; where appropriate, Member States shall ensure that polluters, in cooperation with water suppliers and other relevant stakeholders, take such mitigation measures in accordance with Directive 2000/60/EC; (c) ensuring appropriate monitoring of parameters, substances or pollutants in surface water or groundwater, or both, in the catchment areas for abstraction points, or in raw water, that could constitute a risk to human health through water consumption or lead to unacceptable deterioration of the quality of water intended for human consumption and that have not been taken into consideration in the monitoring performed in accordance with Articles 7 and 8 of Directive 2000/60/EC; where appropriate, this monitoring shall be included in the monitoring programmes referred to in Article 8 of that Directive; (d) evaluation of the need to establish or adapt safeguard zones for groundwater and surface water, as referred to in Article 7(3) of Directive 2000/60/EC, and any other relevant zones. Member States shall ensure that the effectiveness of any measures referred to in this paragraph is reviewed at appropriate intervals. 5. Member States shall ensure that water suppliers and competent authorities have access to the information referred to in paragraphs 2 and 3. In particular, relevant water suppliers shall have access to the monitoring results obtained under point (c) of the first subparagraph of paragraph 2. On the basis of the information referred to in paragraphs 2 and 3, Member States may: (a) require water suppliers to perform additional monitoring or treatment of certain parameters; (b) allow water suppliers to decrease the monitoring frequency of a parameter, or to remove a parameter from the list of parameters to be monitored by the water supplier in accordance with point (a) of Article 13(2), without being required to carry out a risk assessment of the supply system, provided that: (i) the parameter is not a core parameter within the meaning of point 1 of Part B of Annex II; and (ii) no factor that can be reasonably anticipated is likely to cause deterioration of the quality of water intended for human consumption. 6. Where a water supplier is allowed to decrease the monitoring frequency of a parameter or remove a parameter from the list of parameters to be monitored, as referred to in point (b) of the second subparagraph of paragraph 5, Member States shall ensure that appropriate monitoring of those parameters is performed when reviewing the risk assessment and risk management of the catchment areas for abstraction points, in accordance with Article 7(4).
9. (Risk assessment and risk management of the supply system)	1. Member States shall ensure that risk assessment and risk management of the supply system are carried out by the water supplier. 2. Member States shall ensure that the risk assessment of the supply system: (a) takes into account the results of the risk assessment and risk management of the catchment areas for abstraction points carried out in accordance with Article 8; (b) includes a description of the supply system from the abstraction point, treatment, storage and distribution of water to the point of supply; and (c) identifies the hazards and hazardous events in the supply system and includes an assessment of the risks they could pose to human health through use of water intended for human consumption, taking into consideration risks stemming from climate change, leakages and leaking pipes. 3. On the basis of the outcome of the risk assessment carried out in accordance with paragraph 2, Member States shall ensure that the following risk management measures are taken: (a) defining and implementing control measures for the prevention and mitigation of the risks identified in the supply system that could compromise the quality of water intended for human consumption;

Article recasted EU DWD	Full Provisions EU DWD (Directive 2020/2184)
	(b) defining and implementing control measures in the supply system in addition to the measures foreseen or taken in accordance with Article 8(4) of this Directive or Article 11(3) of Directive 2000/60/EC for the mitigation of risks coming from the catchment areas for abstraction points that could compromise the quality of water intended for human consumption; (c) implementing a supply-specific operational monitoring programme in accordance with Article 13; (d) ensuring that, where disinfection forms part of the preparation or distribution of water intended for human consumption, the efficiency of the disinfection applied is validated, that any contamination from disinfection by-products is kept as low as possible without compromising the disinfection, that any contamination from treatment chemicals is kept as low as possible and that any substances remaining in the water do not compromise the fulfillment of the general obligations set out in Article 4; (e) verifying that materials, treatment chemicals and filter media that come into contact with water intended for human consumption used in the supply system comply with Articles 11 and 12. 4. On the basis of the outcome of the risk assessment of the supply system carried out in accordance with paragraph 2, Member States shall: (a) allow the possibility of decreasing the monitoring frequency of a parameter or of removing a parameter from the list of parameters to be monitored, except for the core parameters referred to in point 1 of Part B of Annex II, if the competent authority is satisfied that to do so would not compromise the quality of water intended for human consumption: (i) on the basis of the occurrence of a parameter in raw water, in accordance with the risk assessment of the catchment areas for abstraction points as set out in Article 8(1) and (2); (ii) when a parameter can only occur as a result of the use of a certain treatment technique or disinfection method, and that technique or method is not used by the water supplier; or (iii) on the basis of the specifications set out in Part C of Annex II; (b) ensure that the list of parameters to be monitored in water intended for human consumption in accordance with Article 13 is extended or that the monitoring frequency is increased: (i) on the basis of the occurrence of a parameter in raw water, in accordance with the risk assessment of the catchment areas for abstraction points as set out in Article 8(1) and (2); or (ii) on the basis of the specifications set out in Part C of Annex II. 5. The risk assessment of the supply system shall concern parameters listed in Parts A, B and C of Annex I, parameters set in accordance with Article 5(3) and substances or compounds included in the watch list established in accordance with Article 13(8). 6. Member States may exempt water suppliers supplying between 10 and 100 m3 per day as an average or serving between 50 and 500 people from the requirement to carry out risk assessment and risk management of the supply system, provided that the competent authority is satisfied that such an exemption would not compromise the quality of water intended for human consumption. In the event of such an exemption, the exempted water suppliers shall carry out regular monitoring in accordance with Article 13.
10. (Risk assessment of domestic distribution systems)	1. Member States shall ensure that a risk assessment of domestic distribution systems is carried out. That risk assessment shall comprise the following elements: (a) a general analysis of the potential risks associated with domestic distribution systems, and with related products and materials, and whether those potential risks affect the quality of water at the point where it emerges from the taps that are normally used for water intended for human consumption; this general analysis shall not entail an analysis of individual properties; and

Article recasted EU DWD	Full Provisions EU DWD (Directive 2020/2184)
	(b) monitoring of the parameters listed in Part D of Annex I in premises where specific risks to water quality and human health have been identified during the general analysis performed under point (a). In relation to Legionella or lead, Member States may decide to focus the monitoring referred to in point (b) of the first subparagraph on priority premises. 2. Where Member States conclude, on the basis of the general analysis carried out under point (a) of the first subparagraph of paragraph 1, that there is a risk to human health stemming from domestic distribution systems or from the related products and materials, or where monitoring performed in accordance with point (b) of the first subparagraph of paragraph 1 demonstrates that the parametric values set out in Part D of Annex I are not met, Member States shall ensure that appropriate measures are taken to eliminate or reduce the risk of non-compliance with the parametric values set out in Part D of Annex I. In relation to Legionella, those measures shall target at least priority premises. 3. In order to reduce the risks connected with domestic distribution across all domestic distribution systems, Member States shall ensure that all of the following measures are considered and that those measures considered relevant are taken: (a) encourage owners of public and private premises to carry out a risk assessment of the domestic distribution system; (b) inform consumers and owners of public and private premises about measures to eliminate or reduce the risk of non-compliance with the quality standards for water intended for human consumption due to the domestic distribution system; (c) advise consumers about the conditions of consumption and use of water intended for human consumption, and about possible action to avoid the reoccurrence of those risks; (d) promote training for plumbers and other professionals dealing with domestic distribution systems and the installation of construction products and materials that come into contact with water intended for human consumption; (e) in relation to Legionella, ensure that effective control and management measures which are proportionate to the risk are in place to prevent and address possible outbreaks of the disease; and (f) in relation to lead, if economically and technically feasible, implement measures for substitution of components made of lead in existing domestic distribution systems.
11. (Minimum hygiene requirements for materials that come into contact with water intended for human consumption)	1. For the purposes of Article 4, Member States shall ensure that materials that are intended to be used in new installations or, in the case of repair works or reconstruction, in existing installations for the abstraction, treatment, storage or distribution of water intended for human consumption and that come into contact with such water do not: (a) directly or indirectly compromise the protection of human health as provided for by this Directive; (b) adversely affect the colour, odour or taste of the water; (c) enhance microbial growth; (d) leach contaminants into the water at levels that are higher than necessary in view of the intended purpose of the material. 2. For the purpose of ensuring the uniform application of paragraph 1, the Commission shall adopt implementing acts to establish the specific minimum hygiene requirements for materials that come into contact with water intended for human consumption on the basis of the principles set out in Annex V. Those implementing acts shall establish:

Article recasted EU DWD	Full Provisions EU DWD (Directive 2020/2184)
	(a) by 12 January 2024, methodologies for testing and accepting starting substances, compositions and constituents to be included in European positive lists of starting substances, compositions or constituents, including specific migration limits and scientific pre-conditions related to substances or materials; (b) by 12 January 2025, on the basis of lists including expiry dates compiled by ECHA, European positive lists of starting substances, compositions or constituents for each group of materials, namely organic, cementitious, metallic, enamels and ceramic or other inorganic materials, which are authorised for use in the manufacture of materials or products in contact with water intended for human consumption, including, where appropriate, conditions for their use and migration limits, which are to be determined on the basis of the methodologies adopted pursuant to point (a) of this subparagraph, and taking into account paragraphs 3 and 4; (c) by 12 January 2024, procedures and methods for testing and accepting final materials as used in a product made from materials or combinations of starting substances, compositions or constituents on the European positive lists, including: (i) the identification of relevant substances and other parameters, such as turbidity, flavour, odour, colour, total organic carbon, the release of unexpected substances and enhancement of microbial growth, to be tested in migration water; (ii) methods for testing the effects on water quality, having regard to any relevant European standards; (iii) pass/fail criteria for the test results, which take into account, inter alia, conversion factors for substance migration into estimated levels at the tap, and conditions of application or use, where appropriate. The implementing acts provided for in this paragraph shall be adopted in accordance with the examination procedure referred to in Article 22. 3. The first European positive lists to be adopted in accordance with point (b) of the first subparagraph of paragraph 2 shall be based, inter alia, on existing national positive lists, other existing national provisions and on the risk assessments that led to the establishment of such national lists. For this purpose, Member States shall notify ECHA of any existing national positive lists, other provisions and available assessment documents by 12 July 2021. The European positive list of starting substances for organic materials shall take into account the list established by the Commission pursuant to Article 5 of Regulation (EC) No 1935/2004. 4. The European positive lists shall contain the only starting substances, compositions or constituents that are authorised for use as referred to in point (b) of the first subparagraph of paragraph 2. The European positive lists shall contain expiry dates set on the basis of a recommendation from ECHA. The expiry dates shall be set in particular on the basis of the hazardous properties of the substances, the quality of the underlying risk assessments, and the extent to which those risk assessments are up-to-date. The European positive lists may also contain transitional provisions. On the basis of opinions from ECHA as referred to in paragraph 6, the Commission shall regularly review and update, where necessary, the implementing acts referred to in point (b) of the first subparagraph of paragraph 2, in line with the latest scientific and technological developments. The first review shall be completed by 15 years after the adoption of the first European positive list. The Commission shall ensure that any relevant acts, or standardisation mandates, which it adopts pursuant to other Union legislation are consistent with this Directive. 5. For the purpose of inclusion in or removal from the European positive lists of starting substances, compositions or constituents, economic operators or relevant authorities shall submit applications to ECHA. The Commission shall adopt delegated acts in accordance with Article 21, in order to supplement this Directive, by laying down a procedure, including information requirements, on the application process. The procedure shall ensure that applications are accompanied by risk assessments and that economic operators or relevant authorities deliver the necessary information for the risk assessment in a specific format.

Article recasted EU DWD	Full Provisions EU DWD (Directive 2020/2184)
	6. The Committee for Risk Assessment of ECHA set up pursuant to point (c) of Article 76(1) of Regulation (EC) No 1907/2006 shall issue an opinion on any application submitted pursuant to paragraph 5 within a time limit to be set out in the delegated acts referred to in that paragraph. Further procedural provisions on the application process and on the issuing of opinions by the Committee for Risk Assessment of ECHA may also be included in those delegated acts. 7. Member States shall consider that products approved in accordance with specific minimum hygiene requirements provided for in paragraph 2 satisfy the requirements set out in paragraph 1. Member States shall ensure that only such products in contact with water intended for human consumption that use final materials approved in accordance with this Directive can be placed on the market for the purposes of this Directive. This shall not prevent Member States, in particular when specific local raw water quality so requires, from adopting more stringent protective measures for the use of final materials in specific or duly justified circumstances, in accordance with Article 193 TFEU. Such measures shall be notified to the Commission. Regulation (EU) 2019/1020 shall apply to products covered by this Article. 8. The Commission shall adopt delegated acts in accordance with Article 21, in order to supplement this Directive, by determining the appropriate conformity assessment procedure applicable to products covered by this Article on the basis of the modules in Annex II to Decision No 768/2008/EC of the European Parliament and of the Council (30). In determining which conformity assessment procedure is to be used, the Commission shall ensure that the objectives referred to in Article 1(2) of this Directive are complied with, whilst taking into account the principle of proportionality. For this purpose, the Commission shall take as a starting point the System 1+ of assessment and verification of constancy of performance set out in Annex V to Regulation (EU) No 305/2011, or a broadly equivalent procedure, except where it would be disproportionate. The delegated acts referred to in this paragraph shall also contain rules for the designation of conformity assessment bodies, where such are involved in the respective conformity assessment procedures. 9. Pending the adoption of the implementing acts referred to in paragraph 2, Member States shall be entitled to maintain or adopt national measures on specific minimum hygiene requirements for the materials referred to in paragraph 1, provided that those measures comply with the rules of the TFEU. 10. The Commission shall request one or several European standardisation organisations to draft a European standard for uniform testing and assessment of products in contact with water intended for human consumption in accordance with Article 10 of Regulation (EU) No 1025/2012 of the European Parliament and of the Council (31), in order to facilitate compliance with this Article. 11. The Commission shall adopt delegated acts in accordance with Article 21 in order to supplement this Directive by establishing harmonised specifications for a conspicuous, clearly legible and indelible marking to be used to indicate that products in contact with water intended for human consumption are in conformity with this Article. 12. No later than 12 January 2032, the Commission shall review the functioning of the system as set out in this Article and present a report to the European Parliament and the Council, based in particular on experience gained through the application of Regulations (EC) No 1935/2004 and (EU) No 305/2011, assessing whether: (a) human health as regards the matters covered by this Article is adequately protected throughout the Union; (b) the internal market for products in contact with water intended for human consumption is functioning properly; (c) there is a need for any further legislative proposal on the matters covered by this Article.
13. (Monitoring)	1. Member States shall take all measures necessary to ensure that regular monitoring of the quality of water intended for human consumption is carried out in accordance with this Article and Parts A and B of Annex II, in order to check that the water available to consumers meets the requirements of this Directive and in particular the parametric values set in accordance with Article 5. Samples of water intended for human consumption shall be taken so that they are representative of its quality throughout the year. 2. To meet the obligations imposed in paragraph 1, appropriate monitoring programmes shall be established in accordance with Part A of Annex II for all water intended for human consumption. Those monitoring programmes shall be supply-specific, taking into account the outcomes of the risk assessment of the catchment areas for abstraction points and of the supply systems, and shall consist of the following elements: (a) monitoring of the parameters listed in Parts A, B and C of Annex I, and of the parameters set in accordance with Article 5(3), in accordance with Annex II, and, where a risk assessment of the supply system is carried out, in accordance with Article 9 and Part C of Annex II, unless a Member State decides that one of those parameters can be removed, in accordance with point (b) of the second subparagraph of Article 8(5) or point (a) of Article 9(4), from the list of parameters to be monitored;

Article recasted EU DWD	Full Provisions EU DWD (Directive 2020/2184)
	(b) monitoring of the parameters listed in Part D of Annex I, for the purposes of the risk assessment of domestic distribution systems, as provided for in point (b) of Article 10(1); (c) monitoring of the substances and compounds included in the watch list, in accordance with the fifth subparagraph of paragraph 8 of this Article; (d) monitoring, for the purposes of the identification of hazards and hazardous events, as provided for in point (c) of the first subparagraph of Article 8(2); (e) operational monitoring conducted in accordance with point 3 of Part A of Annex II. 3. The sampling points shall be determined by the competent authorities and shall meet the relevant requirements set out in Part D of Annex II. 4. Member States shall comply with the specifications for the analysis of parameters set out in Annex III, in accordance with the following principles: (a) methods of analysis other than those specified in Part A of Annex III may be used, provided that it can be demonstrated that the results obtained are at least as reliable as those produced by the methods specified in Part A of Annex III, by providing the Commission with all relevant information concerning such methods and their equivalence; (b) for the parameters listed in Part B of Annex III, any method of analysis may be used provided that it meets the requirements set out therein. 5. Member States shall ensure that additional monitoring is carried out on a case-by-case basis of substances and micro-organisms for which no parametric value has been set in accordance with Article 5, if there is reason to suspect that they may be present in numbers or concentrations which constitute a potential danger to human health. 6. By 12 January 2024, the Commission shall adopt delegated acts in accordance with Article 21 in order to supplement this Directive by adopting a methodology to measure microplastics with a view to including them on the watch list referred to in paragraph 8 of this Article once the conditions set out under that paragraph are fulfilled. 7. By 12 January 2024, the Commission shall establish technical guidelines regarding methods of analysis for monitoring of per- and polyfluoroalkyl substances under the parameters 'PFAS Total' and 'Sum of PFAS', including detection limits, parametric values and frequency of sampling. **8. The Commission shall adopt implementing acts to establish and update a watch list addressing substances or compounds of concern to the public or the scientific community on health grounds ('the watch list'), such as pharmaceuticals, endocrine-disrupting compounds and microplastics.** Substances and compounds shall be added to the watch list where they are likely to be present in water intended for human consumption and could pose a potential risk to human health. To that end, the Commission shall make use, in particular, of scientific research of the WHO. The addition of any new substance or compound shall be duly justified under Articles 1 and 4. **Beta-estradiol and Nonylphenol shall be included in the first watch list in view of their endocrine-disrupting properties and the risk they pose to human health. The first watch list shall be established by 12 January 2022.** The watch list shall indicate a guidance value for each substance or compound and where necessary a possible method of analysis that does not entail excessive costs. Member States shall put in place monitoring requirements with regard to the potential presence of the substances or compounds which are included in the watch list, at relevant points of the supply chain for water intended for human consumption. For this purpose, Member States may take into account the information collected under Article 8(1), (2) and (3) of this Directive and may use the monitoring data collected in accordance with Directives 2000/60/EC and 2008/105/EC or other relevant Union legislation, in order to avoid overlapping of monitoring requirements. The monitoring results shall be included in the data sets, set up in accordance with point (b) of Article 18(1), together with the results of the monitoring performed under point (c) of the first subparagraph of Article 8(2).

Article recasted EU DWD	Full Provisions EU DWD (Directive 2020/2184)
	Where a substance or compound included in the watch list is detected, under Article 8(2) or under the fifth subparagraph of this paragraph, in concentrations exceeding the guidance values set out in the watch list, Member States shall ensure that the following measures are considered and that those measures considered relevant are taken: (a) preventive measures, mitigation measures or appropriate monitoring in the catchment areas for abstraction points or in raw water as set out in points (a), (b) and (c) of the first subparagraph of Article 8(4); (b) requiring water suppliers to carry out monitoring of those substances or compounds, in accordance with point (a) of the second subparagraph of Article 8(5); (c) requiring water suppliers to check whether treatment is adequate to reach the guidance value and, where necessary, to optimise the treatment; and (d) remedial actions in accordance with Article 14(6) where Member States consider it necessary to protect human health. The implementing acts provided for in this paragraph shall be adopted in accordance with the examination procedure referred to in Article 22.

For easier comprehension, the articles above of the recasted DWD Directive 2020/2184 that are impacting water quality standards and monitoring have been summarized in the following table. The corresponding rules in the Armenian legislation and regulation

Table 18: Table of correspondence with Armenian regulations

Article recasted EU DWD	Summarized Provisions EU DWD (Directive 2020/2184)	Armenian Legislation and Regulation	Compliance
5. (Quality standards)	Member States must set water quality values based on parameters in Annex I for human consumption. These values cannot be less stringent than those in Parts A-D of Annex I, with Part C values set for monitoring and compliance with Article 14. Member States must also set values for additional parameters to protect human health, meeting at least the requirements of Article 4(1)(a).	C (will enter into force in 2027 according to Decree of the Minister of Health No 53-N of November 16, 2023 on the quality requirements of the water intended human consumption)	NC / PE / C*
7 (Risk-based approach for water safety)	Risk-Based Approach for Water Supply: Member States must ensure the entire water supply chain, from catchment to distribution, follows a risk-based approach. This includes: - (a) Risk assessment/management of catchment areas for water abstraction (Article 8). - (b) Risk assessment/management for each supply system by water suppliers (Article 9). - (c) Risk assessment of domestic distribution systems (Article 10). Adaptation for Geographical Constraints: Member States can adapt the risk-based approach for geographical constraints without compromising water quality or consumer health. Stakeholder Responsibilities: Member States must clearly define and distribute responsibilities among stakeholders for implementing the risk-based approach, tailored to their institutional and legal frameworks. Deadlines for Implementation: - Catchment area risk assessment/management by 12 July 2027, reviewed every six years. - Supply system risk assessment/management by 12 January 2029, reviewed every six years. - Domestic distribution system risk assessment by 12 January 2029, reviewed every six years. Immediate Action on Risks: Member States must act as soon as possible when risks are identified, regardless of the specified deadlines.	NC	NC / PE / C*
8. (Risk assessment and risk management of the catchment areas for abstraction points of water intended for human consumption)	Risk Assessment and Management: Member States must ensure risk assessment and management for catchment areas supplying water for human consumption, following Articles 4-8 of Directive 2000/60/EC. Risk Assessment Components: - (a) Characterization of catchment areas, including identification, mapping, geo-referencing abstraction points, and describing land use and water processes. - (b) Identification and assessment of hazards that could risk water quality. - (c) Monitoring relevant parameters, substances, or pollutants in surface or groundwater. Water Supplier Obligations: Water suppliers must inform authorities about trends and unusual concentrations in monitored parameters. Risk Management Measures: Based on the risk assessment, Member States must implement preventive and mitigation measures, ensure appropriate monitoring, and evaluate the need for safeguard zones.	NC for Risk Bases Assessment Components PE for Water Supplier Obligations Water Supplier Obligations PE for Risk Management Measures PE for Access to Information PE for Ongoing Monitoring	NC / PE / C*

Article recasted EU DWD	Summarized Provisions EU DWD (Directive 2020/2184)	Armenian Legislation and Regulation	Compliance
	Access to Information: Ensure water suppliers and authorities have access to risk assessment information and monitoring results. Adjust monitoring requirements based on this data. Ongoing Monitoring: Even if monitoring frequency is decreased or parameters are removed from the list, appropriate monitoring must be maintained during periodic risk assessment reviews.		
9. (Risk assessment and risk management of the supply system)	Risk Assessment by Water Supplier: Member States must ensure water suppliers conduct risk assessment and management of the supply system. Components of Risk Assessment: - (a) Consider results from catchment area risk assessments (Article 8). - (b) Describe the entire supply system from abstraction to the point of supply. - (c) Identify hazards and assess risks to human health, including those from climate change and leaks. Risk Management Measures: - (a) Implement control measures to prevent and mitigate risks in the supply system. - (b) Implement additional control measures for risks originating from catchment areas. - (c) Conduct supply-specific operational monitoring (Article 13). - (d) Ensure effective disinfection and minimal contamination from by-products and treatment chemicals. - (e) Verify materials and chemicals comply with Articles 11 and 12. Adjustments Based on Risk Assessment: - (a) Decrease or remove monitoring of parameters if it does not compromise water quality, considering the raw water risk assessment and specific treatment techniques. - (b) Extend or increase monitoring based on raw water parameters and specifications in Annex II. Scope of Risk Assessment: Include parameters from Annex I (Parts A, B, C), parameters set in Article 5(3), and substances in the watch list (Article 13(8)). Exemptions for Small Suppliers: Suppliers serving 10-100 m^3/day or 50-500 people may be exempt from risk assessment and management if it doesn't compromise water quality. Exempted suppliers must still conduct regular monitoring (Article 13).	C (will enter into force in 2027 according to Decree of the Minister of Health No 53-N of November 16, 2023 on the quality requirements of the water intended human consumption)	NC / PE / C*
10. (Risk assessment of domestic distribution systems)	Domestic Distribution System Risk Assessment: - (a) Conduct a general analysis of potential risks from domestic distribution systems and related materials affecting tap water quality, without analyzing individual properties. - (b) Monitor parameters in Annex I, Part D, in premises identified as having specific risks to water quality and human health, focusing on Legionella or lead in priority premises if necessary. Action on Identified Risks:	C (will enter into force in 2027 according to Decree of the Minister of Health No 53-N of November 16, 2023 on the quality requirements of the water intended human consumption)	NC / PE / C*

Article recasted EU DWD	Summarized Provisions EU DWD (Directive 2020/2184)	Armenian Legislation and Regulation	Compliance
	- Take appropriate measures to eliminate or reduce risks if the general analysis or monitoring shows a risk to human health or non-compliance with Annex I, Part D parametric values, particularly targeting Legionella in priority premises. Measures to Reduce Risks Across Domestic Distribution Systems: - (a) Encourage risk assessments by owners of public and private premises. - (b) Inform consumers and premises owners about measures to reduce risks. - (c) Advise consumers on safe water consumption and actions to prevent risks. - (d) Promote training for professionals dealing with domestic distribution systems. - (e) Ensure effective control and management measures for Legionella. - (f) Implement lead component substitution in domestic systems if feasible.		
11. (Minimum hygiene requirements for materials that come into contact with water intended for human consumption)	Member States' Responsibilities: - Ensure materials used in water installations (new or for repairs) do not: - Compromise human health. - Affect water color, odor, or taste. - Enhance microbial growth. - Leach contaminants at unnecessary levels. Commission's Role: - Establish hygiene requirements for materials in contact with drinking water via implementing acts by specific deadlines (2024 and 2025). - Develop methodologies for testing materials and creating positive lists of approved substances. European Positive Lists: - Create lists based on existing national lists and risk assessments, including expiry dates and conditions of use. - Regularly review and update these lists based on scientific developments, with the first review by 2039. Application Process: - Economic operators or authorities submit applications to ECHA for inclusion or removal of substances from positive lists, supported by risk assessments. - ECHA's Risk Assessment Committee will review applications within specified timelines. Product Approval and Compliance: - Products meeting the hygiene requirements are deemed compliant. - Only approved materials can be used in water contact products, with possible stricter local measures if necessary. Conformity Assessment Procedures: - The Commission will establish conformity assessment procedures and designate assessment bodies.	PE Armenia has adopted the Eurasian Economic Community's united sanitary rules and requirements, but there is no detailed analysis to which extent they comply with the EU Drinking Water Directive requirements and approaches	NC / PE / C*

Article recasted EU DWD	Summarized Provisions EU DWD (Directive 2020/2184)	Armenian Legislation and Regulation	Compliance
	- Pending EU standards, Member States can maintain or adopt national measures if compliant with EU rules. Standardization and Marking: - The Commission will request European standards for uniform testing and assessment of water contact products. - Delegated acts will establish harmonized marking to indicate product compliance. System Review by 2032: - The Commission will assess the system's effectiveness in protecting health, market functionality, and the need for further legislative proposals.		
13. (Monitoring)	Regular Monitoring: - Member States must ensure regular monitoring of drinking water quality throughout the year to meet the directive's requirements, including parametric values. Monitoring Programs: - Establish supply-specific monitoring programs considering risk assessments of catchment areas and supply systems. These programs should include: - Parameters from Annex I and Article 5(3). - Domestic distribution system parameters (Annex I, Part D). - Substances on the watch list. - Hazard identification parameters. - Operational monitoring as per Annex II. Sampling Points: - Competent authorities will determine sampling points as per Annex II, Part D requirements. Analysis Specifications: - Methods must comply with Annex III, with alternatives allowed if proven equally reliable. - Any method can be used for parameters in Annex III, Part B if it meets the requirements. Additional Monitoring: - Conduct additional monitoring for substances/micro-organisms suspected to pose a health risk. Microplastics Methodology**: - By January 12, 2024, the Commission will establish a methodology to measure microplastics for potential inclusion on the watch list. PFAS Monitoring Guidelines: - By January 12, 2024, technical guidelines for monitoring PFAS substances will be established.	PE	NC / PE / C*

Article recasted EU DWD	Summarized Provisions EU DWD (Directive 2020/2184)	Armenian Legislation and Regulation	Compliance
	Watch List: - The Commission will create and update a watch list of concerning substances, adding those likely to be present in drinking water and potentially harmful, based on WHO research. - Beta-estradiol and Nonylphenol will be included due to their endocrine-disrupting properties. - The list will have guidance values and analysis methods. - Member States will monitor these substances and take preventive or remedial actions if guidance values are exceeded.		

*NC: Non Compliant
*PE: Partly Compliant
*C: Compliant

E. PROPOSED ROAD MAP

The roadmap's objective is to schedule the introduction or certain dispositions of the DWD into Armenian legal framework. The CEPA and this roadmap have adopted the same scope[3].

Within the framework of introduction of Article 6 of the EU Drinking Water Directive, currently existing norms are regulating the quality of drinking water, supplied by the water systems. For monitoring, the point sources envisaged for human consumption (drinking water taps) and drinking water use points (food production) are selected. The provisions related to bottled water are regulated by the technical regulations of the Eurasian Economic Union, they cannot be approved by the Decree of the Minister of Health and thus are not included in the draft.

According to existing legislation in Armenia in the watershed points the monitoring is being implemented by the Hydrometeorology and Monitoring Centre of the Ministry of Environment, thus the Decree of the Minister of Health on approving the norms cannot include assessment of the risks at water abstraction points and risk management. However, in the draft regulation the following provisions are incorporated: risk assessment and management in drinking water abstraction points, which are to be implemented by the authorized agency of the Ministry of Environment and organization in charge of operation water supply system. The risk assessment should also be based on the assessment results of the authorized agency of the Ministry of Environment.

Currently, in the water captation points and head structures the monitoring is being implemented by the organization in charge of operation of drinking water supply system, while in the self-supplied communities, which are outside of the service area of these companies, no such monitoring is performed.

It should be also mentioned that in order to implement the requirements of the Directive the Ministry of Health already closely coordinates with the Ministry of Environment and Water Committee.

[3]
- Adoption of national legislation and designation of competent authority/ies;
- Establishment of standards for drinking water (art. 4 and 5);
- Establishment of a monitoring system (art. 6 and 7);
- Establishment of a mechanism to provide information to consumers (art. 13).

Table 20: Proposed road map

Proposed activity	Deadline	Expected result	Lead organization	Financing
Update existing Order of the Minister of Health of the RA - On approving sanitary norms and rules N2-III-A 2-1 ''Drinking water: the hygienic requirements to water quality of centralized water supply systems'' to introduce EU standards, EU Directive risk assessment and management in drinking water abstraction points.	Q2, 2024	Order of the Ministry of Health	National Centre for Disease Control of the Ministry of Health	State budget and financial resources not prohibited by the legislation
Evaluation of the quality of laboratory testing results based on EU standards of water sources that are used by existing water supply systems and identifying not corresponding ones	Q1, 2025	Assessment report	Ministry of Environment, Water Committee, National Centre for Disease Control of the Ministry of Health	Financial resources not prohibited by the legislation
Discussion and exploring options on the responsibilities for quality of water on tap between water supplier, condominiums and dwelling owners.	Q2, 2025	Package of recommendations	Water Committee, Ministry of Environment, National Centre for Disease Control of the Ministry of Health	Financial resources not prohibited by the legislation
Discussion and exploring options on the implementation of standards in the dwellings without specialized water supplier.	Q2, 2025	Package of recommendations	Water Committee, Ministry of Environment, National Centre for Disease Control of the Ministry of Health	Financial resources not prohibited by the legislation
Develop or update existing legislation in Armenia the monitoring of the in the watershed points is being implemented by the Hydrometeorology and Monitoring Centre of the Ministry of Environment	Q1, 2025	Order of the Ministry of Environment	Ministry of Environment	State budget and financial resources not prohibited by the legislation
Evaluation of the capacitates of laboratories in the responsible governmental bodies as well as water supply company and identified needs in a lab. equipment, testing standards, trained personnel, reagents.	Q4, 2024	Assessment report	Ministry of Environment, Water Committee, National Centre for Disease Control of the Ministry of Health	Financial resources not prohibited by the legislation

Proposed activity	Deadline	Expected result	Lead organization	Financing
Discussion and exploring options on enhancing the capacities of the laboratories in the responsible governmental bodies as well as supply company to have a necessary lab. equipment, testing standards, trained personnel, reagents.	Q2, 2025	Package of recommendations, including the list of equipment needed, personnel to be trained, standards to be obtained and implemented	Water Committee, Ministry of Environment, National Centre for Disease Control of the Ministry of Health	Financial resources not prohibited by the legislation
Establish a mechanism to provide information to consumers	Q2, 2025	Legal act	Water Committee	Financial resources not prohibited by the legislation

F. PROPOSED NEXT STEP

As part of consultations with the key stakeholders, on February 16, 2023 the text of Drinking Water Directive and it's unofficial translation were officially presented to the all responsible governmental agencies, namely to the Ministry of Environment, Ministry of Territorial Administration (Department of self-governance, the Water Committee), Health and Labor Inspection Body. Discussions were taken place with the responsible staff, which contributed to the recommendations included in the road map of activities.

In addition to that, in order to promote introduction of the requirements of EU Drinking Water Directive in Armenia and consult with the relevant stakeholders, the Ministry of Health sent corresponding letters to the Ministry of Environment, Health and Labor Inspection Body of the Republic of Armenia, Water Committee of the Ministry of Territorial Administration and Infrastructures, Public Services Regulatory Commission, in order that these agencies presence corresponding specialists to be involved in works on harmonization with the EU Drinking Water Directive. Unofficial translation of the Directive in Armenian language was also attached to the letter.

All key stakeholder organizations have officially nominated representatives and the Ministry of Health bilaterally consulted with them on the proposed activities under the road map.

To continue the process of consultations, it is proposed that with the support of the "EU4Environment – Water and Data" project stakeholder consultation workshop is organized to discuss the draft, after which the revised draft would be formally circulated among the stakeholder institutions and initiate the process of official adoption of the road map.