S.I. No. 9 of 2010

European Communities Environmental Objectives (Groundwater) Regulations, 2010

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These Regulations revoke the Local Government (Water Pollution) (Amendment) Regulations 1999 (S.I. No. 42 of 1999) from 2013.

These Regulations establish a new strengthened regime for the protection of groundwater by giving effect to the measures needed to achieve the environmental objectives established for groundwater by Directive 2000/60/EC and by giving effect to the requirements of Directive 2006/118/EC. The Regulations establish clear environmental objectives to be achieved in groundwater bodies within specified timeframes and introduce the legal basis for a more flexible, proportionate and risk-based approach to implementing the legal obligation to prevent or limit inputs of pollutants into groundwater, which already exists under Directive 80/68/EEC. Measures for this purpose include the following:

- measures to prevent or limit the input of pollutants into groundwater and to prevent the deterioration of the status of all bodies of groundwater
- measures to protect, enhance and restore all bodies of groundwater and to ensure a balance between abstraction and recharge of groundwater, with the aim of achieving good groundwater within a particular timeframe
- measures requiring the reversal of any significant and sustained upward trend in the concentration of any pollutant resulting from the impact of human activity in order to progressively reduce pollution of groundwater
- measures for determining groundwater quantitative and chemical status
- measures establishing procedures for the identification of significant and sustained upward trends and the definition of the starting point for trend reversal
- the laying down of rules for the presentation and reporting of groundwater monitoring results, trend assessments and the classification of quantitative status and chemical status of groundwater bodies

SCHEDULE 1

The public authorities to which these Regulations apply are—

The Environmental Protection Agency
The relevant local authorities
The regional authorities in the area
The regional fisheries boards in the area
The Geological Survey of Ireland
Teagasc
The National Roads Authority
The Radiological Protection Institute of Ireland
The Central Fisheries Board
The Electricity Supply Board
The Commission for Energy Regulation
Port and Harbour Authorities including Port companies established under the 1996 Harbours Act
The Dublin Docklands Development Authority
Waterways Ireland
An Bord Pleanála
Bord Na Móna
Coillte
The Health and Safety Authority
The Commissioners of Public Works
The Minister for Agriculture, Fisheries and Food
The Minister for Communications, Energy and Natural Resources
The Minister for Enterprise, Trade and Employment
The Minister for Environment, Heritage and Local Government
The Minister for Transport

SCHEDULE 2

Indicative list of the main pollutants

1.	Organohalogen compounds and substances, which may form such compounds in the aquatic environment.
2..	Organophosphorous compounds
3.	Organotin compounds.
4.	Substances and preparations, or the breakdown products of such, which have been proved to possess carcinogenic or mutagenic properties or properties which may affect steroidogenic, thyroid, reproduction or other endocrinerelated functions in or *via* the aquatic environment.
5.	Persistent hydrocarbons and persistent and bioaccumulable organic toxic substances.
6.	Cyanides.
7.	Metals and their compounds.
8..	Arsenic and its compounds
9.	Biocides and plant protection products.
10.	Materials in suspension.
11.	Substances, which contribute to eutrophication (in particular, nitrates and phosphates).
12.	Substances, which have an unfavourable influence on the oxygen balance (and can be measured using parameters such as BOD, COD, etc.).

SCHEDULE 3

Test procedures for assigning quantitative status to groundwater bodies

The following four tests shall be applied, where applicable, to assess groundwater body quantitative status; these are summarised below.

Table 1: Assessment for the presence of saline or other intrusions (test 1)

This is a common assessment for groundwater chemical status and groundwater quantitative status.

Conditions for applying test		Criteria for poor groundwater quantitative status
Failure of a threshold value indicative of a risk of saline intrusion; or Indications of a significant risk of other intrusions		(a) Significant and sustained upward trends in electrical conductivity indicating saline intrusion; (b) Significant or sustained upward trend in the concentration of indicators of the risk of other intrusions; or (c) Evidence that abstractions have been rendered unsuitable for use without additional treatment as a result of an intrusion.

Table 2 Assessment of adverse impacts of groundwater abstraction on associated surface water bodies (test 2)

Conditions for applying test		Criteria for poor groundwater quantitative status
A river flow standard that is required to achieve 'good status' is failed in an associated surface water body and there is reason to suspect that groundwater abstractions may be contributing to Failure		(a) An applicable river flow standard for 'good status' is failed in an associated river water body; and (b) The total volume of groundwater abstractions in the surface water catchment associated with the failing river are greater than 50% of the required surface water flow standard.

Table 3: Assessment of adverse impacts of groundwater abstraction on groundwater dependent terrestrial ecosystems (wetlands) included in the register of protected areas established under Regulation 8 of the 2003 Regulations (test 3)

Conditions for applying test	Criteria for poor groundwater quantitative status
Indications of significant damage to a wetland, included in the register of protected areas established under Regulation 8 of the 2003 Regulations, resulting from insufficient water availability where alterations to groundwater levels are suspected to be the major cause of the insufficient water availability	There is evidence of significant damage to a wetland, included in the register of protected areas established under Regulation 8 of the 2003 Regulations, caused by insufficient water availability and the major reason for the insufficient water availability is judged to be alterations to groundwater levels resulting from human activities.

Table 4 Assessment of water balance in a groundwater body (test 4)

Conditions for applying test	Criteria for poor groundwater quantitative status
Apply to all bodies where there are groundwater abstractions	a) The long-term annual average volume of water abstracted from the groundwater represents more than 80% of the long-term annual volume of recharge (i.e. water that replenishes the groundwater); or b) The long-term annual average volume of water abstracted from the groundwater represents more than 20% of the long-term annual volume of recharge in bedrock groundwater bodies (30% in gravel bodies)and there is evidence of a long-term drop in groundwater levels in the body of groundwater; or c) A Groundwater dependent terrestrial ecosystem (GWDTE), included in the register of protected areas established under Regulation 8 of the 2003 Regulations, is damaged and the long-term annual average volume of water abstracted from the groundwater represents more than 5% of the long-term annual volume of recharge in the groundwater body containing the GWDTE and there is evidence of a long-term drop in groundwater levels in the groundwater body.

SCHEDULE 4

Groundwater Quality Standards

1. For the purposes of assessing groundwater chemical status in accordance with Regulations 39 to 43, the following groundwater quality standards will be the quality standards referred to in Regulation 40(*a*) and established in accordance with Article 17 of Directive 2000/60/EC.

Pollutant		Quality standards
Nitrates		50 mg/l
Active substances in pesticides, including their relevant metabolites, degradation and reaction products ([1])		0.1 µg/l 0.5 µg/l (total) ([2])

([1]) 'Pesticides' means plant protection products and biocidal products as defined in Article 2 of Directive 91/414/EEC and in Article 2 of Directive 98/8/EC, respectively.
([2]) 'Total' means the sum of all individual pesticides detected and quantified in the monitoring procedure, including their relevant metabolites, degradation and reaction products.

2. The results of the application of the quality standards for pesticides in the manner specified for the purposes of this Directive will be without prejudice to the results of the risk assessment procedures required by Directive 91/414/EEC or Directive 98/8/EC.

3. Where, for a given body of groundwater, it is considered that the groundwater quality standards could result in failure to achieve the environmental objectives specified in the Article 4 of Directive 2000/60/EC, for associated bodies of surface water, or in any significant diminution of the ecological or chemical quality of such bodies, or in any significant damage to terrestrial ecosystems which depend directly on the body of groundwater, more stringent threshold values will be established by the Agency in accordance with Regulations 48 to 52 of these Regulations. Programmes and measures required in relation to such a threshold value will also apply to activities falling within the scope ofthe 2009 Regulations.

SCHEDULE 5

Groundwater Threshold Values

PARAMETER	UNITS	THRESHOLD VALUES FOR CHEMICAL STATUS TESTS [1]				OVERALL THRESHOLD VALUE RANGE
		Column 1 Test:Assessment For the presence of saline or other intrusions **Column 2** Test: Assessment of adverse impacts of chemical inputs from groundwater on associated surface water bodies **Column 3** [2] Test: Assessment Of whether groundwater intended for human consumption in drinking water protected areas is impacted by pollutants and/or is showing a significant and sustained rise in pollutant levels. **Column 4** [3] Test: Assessment Of the general quality of groundwater in a groundwater body in terms of whether its ability to support human uses has been significantly impaired by pollution				
		Column 1	**Column 2**	**Column 3** [2]	**Column 4** [3]	
Inorganics & Metals						
Electrical Conductivity	µS/cm	800	-	1875	-	800 - 1875
Molybdate Reactive Phosphorus	µg/l P	-	35	-	-	35
Ammonium	µg/l N		65	175	175	65 - 175
Nitrite	µg/l NO_2			375		375
Nitrate	mg/l NO_3			37.5	37.5	37.5
Chloride	mg/l Cl	24		187.5		24 – 187.5
Sulphate	mg/l SO_4			187.5	187.5	187.5
Sodium	mg/l Na			150		150
Boron	µg/l B			750	750	750
Chromium	µg/l Cr				37.5	37.5
Arsenic	µg/l As				7.5	7.5
Lead	µg/l Pb				18.75	18.75

Nickel	µg/l Ni				15	15
Mercury	µg/l Hg				0.75	0.75
Cadmium	µg/l Cd				3.75	3.75
Copper	µg/l Cu				1500	1500
Aluminium	µg/l Al				150	150
Cyanide	µg/l CN				37.5	37.5
Pesticides						
Atrazine	µg/l			0.075	0.075	0.075
Simazine	µg/l			0.075	0.075	0.075
MCPA	µg/l			0.075	0.075	0.075
Lindane	µg/l			0.075	0.075	0.075
Diuron	µg/l			0.075	0.075	0.075
4,4 — DDT	µg/l			0.075	0.075	0.075
Dieldrin	µg/l			0.075	0.075	0.075
Cypermethrin	µg/l			0.075	0.075	0.075
Bentazone	µg/l			0.075	0.075	0.075
Glyphosate	µg/l			0.075	0.075	0.075
Chlortoluron	µg/l			0.075	0.075	0.075
Mecoprop	µg/l			0.075	0.075	0.075
Isoproturon	µg/l			0.075	0.075	0.075
2,4 Dichlorophenoxyacetic acid	µg/l			0.075	0.075	0.075
Total Pesticides	µg/l			0.375	0.375	0.375
Organics						
1,2-Dichloroethane	µg/l				2.25	2.25
Vinyl Chloride	µg/l				0.375	0.375
Total Tetrachloroethene & Trichloroethene	µg/l				7.5	7.5
Benzene	µg/l				0.75	0.75
Benzo(alpha)pyrene	ng/l				7.5	7.5
Total Polycyclic Aromatic Hydrocarbons	µg/l				0.075	0.075
Total Trihalomethanes	µg/l				75	75

Notes

1 "Threshold values" have been established for pollutants that are causing a risk to groundwater bodies. Exceedance of a relevant threshold value at a representative monitoring point triggers further investigation to confirm whether the criteria for poor groundwater chemical status are being met. If the criteria for poor chemical status are being met by one or more of the test procedures in Schedule 7, then a body or a group of bodies of groundwater is classified as being at poor chemical status.

Threshold values are expressed as annual arithmetic mean concentrations.

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2 For the drinking water test, further investigation includes an assessment of significant and sustained upward trends in concentration of the relevant pollutant at the monitoring point.

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3 For the general chemical test, further investigation includes the aggregation of data from a representative group of monitoring points, comparison of the aggregated annual arithmetic mean concentration of the relevant pollutant with the threshold value and confirmation of significant impairment of the groundwater body's ability to support human uses.

SCHEDULE 6 Rules for establishing threshold values for groundwater pollutants and indicators of pollution

Part A

Guidelines for the establishment of threshold values by Member States in accordance with Regulations 48 to 52 of these Regulations

Where the Agency identifies additional pollutants and indicators of pollution which, pursuant to the characterisation performed in accordance with Article 5 of Directive 2000/60/EC, characterise bodies or groups of bodies of groundwater as being at risk of failing to achieve good groundwater chemical status, the Agency will establish additional threshold values for those additional pollutants and indicators of pollution.

Threshold values will be established in such a way that, should the monitoring results at a representative monitoring point exceed the thresholds, this will indicate a risk that one or more of the conditions for good groundwater chemical status referred to in Article 4(2)(*c*)(ii), (iii) and (iv) of Directive 2006/118/EC are not being met.

When establishing threshold values, the Agency will consider the following guidelines:
1) the determination of threshold values should be based on:
(*a*) the extent of interactions between groundwater and associated aquatic and dependent terrestrial ecosystems;
(*b*) the interference with actual or potential legitimate uses or functions of groundwater;
(*c*) all pollutants which characterise bodies of groundwater as being at risk, taking into account the minimum list set out in Part B;
(*d*) hydro-geological characteristics including information on background levels and water balance.

2) the determination of threshold values should also take account of the origins of the pollutants, their possible natural occurrence, their toxicology and dispersion tendency, their persistence and their bioaccumulation potential.

3) wherever elevated background levels of substances or ions or their indicators occur due to natural hydro-geological reasons, these background levels in the relevant body of groundwater shall be taken into account when establishing threshold values.

4) the determination of threshold values should be supported by a control mechanism for the data collected, based on an evaluation of data quality, analytical considerations, and background levels for substances which may occur both naturally and as a result of human activities.

Part B

Minimum list of pollutants and their indicators for which the Agency must consider when establishing threshold values in accordance with Regulations 48 to 52 of these Regulations

1) Substances or ions or indicators which may occur both naturally and/or as a result of human activities: **Arsenic | Cadmium| Lead | Mercury | Ammonium | Chloride| Sulphate**

2) Man-made synthetic substances: **Trichloroethylene | Tetrachloroethylene**

3) Parameters indicative of saline or other intrusions ([1]): **Conductivity**

[1] With regard to saline concentrations resulting from human activities, the Agency may decide to establish threshold values either for sulphate and chloride or for conductivity.

Part C

Information to be provided by the Agency with regard to the pollutants and their indicators for which threshold values have been established

The Agency shall provide to the Minister and the coordinating local authority of each river basin district a summary of the way the procedure set out in Part A of this Schedule has been followed for inclusion in the river basin management plans to be submitted in accordance with Regulation 13 of the 2003 Regulations.

In particular, the Agency will provide, where feasible:

a) information on the number of bodies or groups of bodies of groundwater characterised as being at risk and on the pollutants and indicators of pollution which contribute to this classification, including the observed concentrations/values;

b) information on each of the bodies of groundwater characterised as being at risk, in particular the size of the bodies, the relationship between the bodies of groundwater and the associated surface waters and directly dependent terrestrial ecosystems, and, in the case of naturally- occurring substances, the natural background levels in the bodies of groundwater;

c) the threshold values, whether they apply at the national level, at the level of the river basin district or the part of the international river basin district falling within the territory of Ireland, or at the level of a body or a group of bodies of groundwater;

d) the relationship between the threshold values and:

   i. in the case of naturally-occurring substances, the observed background levels,

   ii. the environmental quality objectives and other standards for water protection that exist at national, Community or international level, and

   iii. any relevant information concerning the toxicology, eco-toxicology, persistence, bioaccumulation potential, and dispersion tendency of the pollutants.

SCHEDULE 7

Test procedures for assigning chemical status to groundwater bodies

The following five tests shall be applied, where applicable, to assess groundwater body chemical status; these are summarised below.

Table 1 Assessment for the presence of saline or other intrusions (test 1)

This is a common assessment for groundwater chemical status and groundwater quantitative status.

Conditions for applying test	Criteria for poor groundwater chemical status
Failure of a threshold value indicative of a risk of saline intrusion; or Indications of a significant risk of other intrusions	(a) Significant and sustained upward trends in electrical conductivity indicating saline intrusion (b) Significant or sustained upward trend in the concentration of indicators of the risk of other intrusions; or (c) Evidence that abstractions have been rendered unsuitable for use without additional treatment as a result of an intrusion.

Table 2 Assessment of adverse impacts of the chemical inputs from groundwater on associated surface water bodies (test 2)

Conditions for applying test	Criteria for poor groundwater chemical status
Failure of a groundwater threshold value that is indicative of a potential adverse impact on associated surface waters; or an associated surface body is at less than good status and there is reason to suspect that inputs of pollutants *via* groundwater are contributing to the failure	(a) An applicable chemical or physicochemical standard for 'good status' is failed in an associated surface water body; and (b) The inputs *via* groundwater contribute greater than 50% of the surface water standard in the surface water body

Table 3: Assessment of adverse impacts of groundwater on groundwater dependent terrestrial ecosystems (wetlands) included in the register of protected areas established under Regulation 8 of the 2003 Regulations (test 3)

Conditions for applying test		Criteria for poor groundwater chemical status
Indications of significant damage to a wetland, included in the register of protected areas established under Regulation 8 of the 2003 Regulations, resulting from pollution where the source of pollution is suspected to be groundwater		There is evidence of significant damage to a wetland included in the register of protected areas established under Regulation 8 of the 2003 Regulations caused by pollution and the pollutants responsible for that damage are judged to have reached the wetland *via* groundwater.

Table 4: Assessment of whether the quality of untreated groundwater satisfies the drinking water protected areas requirements (test 4)

Conditions for applying test		Criteria for poor groundwater chemical status
Failure of a threshold value indicative of potential risks to abstractions for human consumption; Indications of a risk of failure of the drinking water protected area objective for the water body		a) An applicable chemical or potential risks to abstractions for human physicochemical threshold value has been consumption; exceeded for a drinking water protected area (or the threshold value is projected to be exceeded in the next river basin management plan cycle); and b) There are statistically significant or sustained upward trend in the concentration of this parameter

Table 5: Assessment of the general quality of groundwater in the body in terms of whether its ability to support human uses has been significantly impaired by pollution (test 5)

Conditions for applying test		Criteria for poor groundwater chemical status
Failure of a threshold value indicative of a potential risk to the general quality of the water body.		a) A chemical or physicochemical threshold value, that is applicable to human uses, has been exceeded at any representative monitoring point in a groundwater body or group of groundwater bodies; and b) The average of the monitoring results representative of the groundwater in the body exceeds the threshold value; and c) Evidence confirms that there is a significant impairment to the groundwater body's ability to support human uses.