

The Legal Protection of Water Resources Against Pollution Under Administrative Law

الحماية القانونية للموارد المائية من التلوث في ظل القانون الإداري

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Abstract:

This article explores the legal protection of water resources against pollution under administrative law. It focuses on the complementary roles of the regulatory function (through administrative police) and the public service function (through water and sanitation services). The regulatory role includes preventive controls like permits and environmental assessments, as well as post-activity oversight such as inspections and sanctions. Meanwhile, the public service role ensures access to clean water and safe wastewater management. The article argues that both mechanisms are essential and interdependent. Strengthening this synergy improves pollution prevention and promotes sustainable resource management.

Keywords: administrative law. water resources. Pollution .service function.

ملخص:

يتناول هذا المقال موضوع الحماية القانونية للموارد المائية من التلوث في ظل القانون الإداري، مبرزاً أهمية التكامل بين الدور الضبطي والدور المرفقي الذي تمارسه السلطات العمومية، ويعتمد الدور الضبطي على آليات الرقابة الإدارية، سواء الرقابة القبلية كالترخيص ودراسات الأثر البيئي، أو الرقابة البعدية كالمعاينة والعقوبات، بهدف الحد من الأنشطة الملوثة للمياه وفي المقابل، يضطلع مرفق المياه والتطهير بدور محوري في الوقاية من التلوث من خلال ضمان توفير مياه نظيفة والتخلص الآمن من المياه المستعملة، ويشكل هذان الدوران – الضبطي والمرفقي – ركيزتين أساسيتين في منظومة الحماية البيئية، ويخلص المقال إلى أن فعالية هذه الحماية لا تتحقق إلا من خلال تنسيق وتكامل الجهود بين الجانبين، بما يضمن استجابة قانونية وإدارية شاملة لمخاطر التلوث.

الكلمات المفتاحية: القانون الإداري، الموارد المائية، التلوث، المرفق العام.

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Introduction:

Water is not only a fundamental element of life but also a strategic resource essential to sustainable development, environmental stability, and public health. In recent decades, the issue of water pollution has become increasingly alarming, especially in light of industrial expansion, urbanization, and the unsustainable exploitation of natural resources. These factors have led to the deterioration of water quality, posing serious threats to ecosystems, human well-being, and the availability of safe water for future generations ¹.

Given the critical importance of water, the legal protection of water resources has emerged as a central concern in many legal systems, including within the framework of administrative law. This branch of law plays a pivotal role in organizing and regulating the activities of public authorities in their mission to safeguard public interests and manage vital resources. The aim of this article is to analyze the legal mechanisms employed by public authorities to protect water resources from pollution, with a particular focus on the tools provided by administrative law in this field.

To build a clear and solid understanding of the issue, the article begins by addressing the concept of pollution, its legal and environmental definitions, and its practical implications on water resources. Pollution, in this context, refers to any alteration of the physical, chemical, or biological properties of water that may render it harmful or unfit for its intended uses. Understanding the nature and sources of pollution is essential to assessing the adequacy of legal responses.

The article then turns to examine the main legal instruments used by administrative authorities to combat water pollution, focusing on two complementary approaches. The first is the administrative police power, a regulatory tool that allows authorities to supervise and control polluting activities through licenses, inspections, sanctions, and preventive measures. This mechanism is preventive in nature and plays a significant role in limiting activities that may pose risks to water quality. The second is the public service model for water and sanitation, which also contributes to combating pollution by ensuring the proper collection, treatment, and disposal of wastewater through infrastructure and service provision. This model, when effectively managed, helps prevent pollution at its source and promotes better resource management.

This topic is of great relevance, particularly in the context of growing environmental awareness and the increasing need for effective governance of natural resources. Despite the existence of legal frameworks and institutional mechanisms, questions remain about their actual effectiveness in achieving the desired level of environmental protection. Therefore, the core research question addressed in this article is: **To what extent are the administrative legal mechanisms effective in protecting water resources from pollution?**

To explore this question, the article adopts two methodological approaches: the analytical approach, which involves a detailed examination of legal texts, administrative practices, and case law within the national legal system; and the comparative approach, which draws insights from other legal systems and international standards to evaluate the strengths and limitations of the existing framework. This dual methodology allows for a nuanced understanding of the issue and opens the door for proposing improvements or reforms where necessary.

In sum, this article seeks not only to clarify the legal foundations of water protection under administrative law but also to contribute to the broader discussion on environmental governance and the role of the state in ensuring the sustainability of vital resources.

The topic was addressed by first clarifying the concept of pollution in the context of water resources, followed by an examination of the legal mechanisms established within administrative law to protect water resources from pollution.

Section 1: Toward a Precise Formulation of the Notion of Water Pollution

Various sector-specific definitions of pollution in comparative legal systems reveal a broader, underlying concept of pollution—one that aligns closely with the definition adopted by the Algerian legislator.

Generally, pollution as a legal concept involves two key elements: A material criterion, referring to the introduction of a pollutant into the environment **A**, and A teleological (purpose-based) criterion which identifies the specific interest protected by law, as reflected in the different regulatory frameworks addressing various forms of pollution. We will then distinguish between pollution and nuisances, thus the concept of pollution will be clarified **B**.

A) The Material Criterion of the Pollution Concept: The Introduction of a Pollutant into the Environment

For an action to be legally classified as pollution, the introduction of a pollutant into the environment must originate from human activity **(1)**. In other words, pollution does not encompass natural phenomena unless they are triggered or intensified by anthropogenic causes.

Additionally, the nature and quantity of the pollutant are significant considerations in defining pollution **(2)**. Legal frameworks may assess the type of substance introduced and the extent of its presence in the natural environment to determine whether it constitutes a legally relevant form of pollution.

1. human activity is at the origin of all pollution

In comparative law², pollution arises from the introduction of harmful and toxic substances or energy into the environment. A similar definition is provided by the Algerian legislator, although it simplifies the concept by describing pollution as "a direct or indirect alteration of the environment"³.

However, this introduction of pollutants is always the result of human activity. The type of activity responsible for the pollution is a key consideration, as clearly, industrial, agricultural, and energy-related activities do not contribute to pollution in the same manner⁴.

As for the sources of this pollution as a result of human activities, they can be traced primarily to three major sectors: agriculture, industry, and domestic life. One significant source is agricultural runoff, which stems from the excessive use of fertilizers, pesticides, and other chemicals in farming practices. Rainfall often washes these substances into rivers, lakes, and groundwater, leading to serious consequences such as eutrophication, harmful algal blooms, and the deterioration of water quality. These pollutants not only harm aquatic ecosystems but can also affect human health through contaminated drinking water.⁵

Another critical source is industrial wastewater, which includes various pollutants such as toxic chemicals, heavy metals, and organic waste released during manufacturing and production processes. When industrial effluents are discharged without proper treatment, they severely pollute

both surface and underground water sources. This form of pollution tends to be persistent, affecting the environment and biodiversity over long periods.⁶

Finally, domestic sewage—wastewater generated by households—is a widespread source of water pollution. It includes organic matter, detergents, and pathogens, and when untreated, it contributes to waterborne diseases and oxygen depletion in aquatic environments. This issue is particularly alarming in urban areas lacking adequate sewage treatment infrastructure.⁷

These human-induced sources of pollution highlight the importance of integrated water management, strict environmental controls, and public awareness to prevent further degradation of water resources.

Jean-Pierre Beurier emphasizes that while pollution originates from human activities, it generally does not include natural events such as storms, floods, earthquakes, or volcanic eruptions. However, he raises an important nuance: one might question whether pollution caused indirectly by natural phenomena through human-related activities could fall under the legal definition of pollution. For example, a fire triggered by lightning striking a chemical storage facility, or the release of radioactive substances from a nuclear plant due to an earthquake, may still be considered pollution, as the human-made infrastructure is the vector through which the environmental harm is realized⁸.

In both Algerian law and comparative legal systems, the notion of accidental pollution is explicitly recognized. For instance, French environmental law refers directly to “accidental pollution in the event of flooding,”⁹ and similarly, Algerian legislation also acknowledges this category of pollution¹⁰.

Case law has reinforced this interpretation: in the Erika oil spill case, the release of hydrocarbons during a storm was legally classified as pollution. Courts have also recognized a direct causal link between events such as fires and subsequent water or soil pollution that result in personal harm. Such incidents are generally understood to fall under the definition of “indirect” pollution, as described in statutory frameworks¹¹.

According to Jean-Pierre Beurier, these forms of pollution should indeed be considered under environmental law, particularly with regard to duties of notification and emergency assistance. Beurier defines “indirect introduction” of pollutants as situations where an intermediate element exists between the original human action and the actual entry of the pollutant into the environment¹².

Examples include: The discharge of pollutants through wastewater pipes, or the storage of toxic materials that later seep into the soil and contaminate groundwater.

Additionally, Gabriel Ullmann identifies another form of indirect pollution: the case of so-called secondary pollutants. A prime example is ozone, which is not emitted directly but rather formed through photo-oxidation reactions involving primary pollutants, such as nitrogen oxides (NO_x). These secondary pollutants illustrate how environmental harm can arise through complex chemical processes, further emphasizing the need for legal frameworks to account for both direct and indirect pollution pathways¹³.

2. Pollutants Introduced into the Natural Environment

Pollution, by definition, involves the introduction of "substances or energy" into the natural environment—a broad expression that encompasses all types of pollutants. This includes tangible elements such as solid, liquid, or gaseous substances, as well as various forms of energy like noise, vibrations, heat, and radiation, and of course, waste in its many forms¹⁴. This refers specifically to what Law 01-19 classifies as special and hazardous waste. These wastes, due to their composition or the harmful properties of the substances they contain, are likely to pose a threat to public health and/or the environment.

Hazardous waste may include materials that are toxic, corrosive, flammable, explosive, or biologically dangerous, and their improper management can result in serious ecological degradation and long-term health risks. For this reason, Law 01-19 establishes strict regulatory controls over their generation, storage, transport, treatment, and disposal, ensuring that such waste is handled in a way that minimizes its potential harm¹⁵.

However, in some legal texts, the nature of the pollutant is further specified. Regulations may classify pollutants based on their characteristics—physical, chemical, biological, or other scientific distinctions—depending on the context and the specific environmental threat they represent. This classification is the result of scientific research and analysis, as exemplified in the work of François Ramade¹⁶. His approach takes into account not only the environmental medium affected (such as air, water, or soil), but also the type of pollutants involved—whether physical, chemical, or biological—as well as the specific nature of the pollution. Examples of such categories include:

- Thermal pollution,
- Hydrocarbon contamination,
- Pesticide-related pollution, and
- Non-volatile synthetic organic compounds, among others.

This multidimensional framework allows for a more nuanced understanding of pollution and is essential for the development of effective regulatory and remediation strategies.

Moreover, one might wonder whether the pollutant nature depends on the quantitative criterion that refers to a pollution threshold. Here, the pollutant nature of a substance is linked to exceeding a threshold established to prevent the occurrence of ecological damage. Thus, not every emission necessarily constitutes pollution. There is pollution when the substance released into the environment exceeds the discharge or environmental quality standards set by the authorities. According to Jean-Pierre Beurier, "the question of whether it can be considered as causing pollution is of a quantitative nature: there is pollution if it reaches a certain level of significance."¹⁷

This quantitative approach to pollution is complemented by a qualitative perspective, particularly when dealing with extremely hazardous substances or the cocktail effect arising from the interaction of various pollutants. Additionally, the quantitative method often fails to address certain types of pollution, such as diffuse pollution, where the precise origin remains unclear, or pollution types for which no specific regulatory standards have been established¹⁸.

This highlights the need for a more comprehensive understanding of pollution, one that incorporates both measurement and the complexity of chemical interactions to accurately assess environmental and health impacts.

This broad conception of pollution prevails in international law, as emphasized by Nicolas de Sadeleer¹⁹. Indeed, most definitions in international law adopt an expansive interpretation of the notion of polluter. For instance, the 1975 Community Recommendation defines the polluter as "someone who directly or indirectly degrades the environment or creates conditions leading to its degradation." Numerous international conventions or European Union texts also focus on environmental degradation without specifying thresholds. This understanding aligns with the concept of environmental impact or damage. Pollution is then viewed as a specific form of harm resulting from the introduction of substances or energy into an environment. This perspective holds true when addressing harm after its occurrence, particularly during reparations, if feasible. However, unlike damage, the concept of pollution also carries a preventive dimension in legal contexts. Addressing various pollution phenomena (water, air, soil pollution, etc.) aims to identify pollution sources to regulate and plan human activities that cause them²⁰.

The ecological scale at which pollution exerts its effects raises pertinent questions: does it impact individual organisms, species populations, ecosystems, or the biosphere as a whole? Notably, legal definitions of pollution often do not specify a particular territorial scope. Instead, the extent and severity of the pollution event dictate the applicable legal framework. This approach minimizes the gap between factual occurrences and legal responses, allowing objective realities to shape legal considerations. Consequently, the law can systematically address pollution by regulating human activities responsible for environmental degradation.²¹

Through the descriptive concept of pollution, legal definitions primarily focus on the harmful and toxic effects on the environment. This approach reveals not only a material criterion—the introduction of a substance into the environment—but also a teleological (goal-oriented) criterion, centered on the damage caused to protected interests.

Pollution is therefore legally recognized because of the harm it causes to specific protected values. According to the Algerian legislator, a polluting act must result in a situation that is harmful to human health, safety, well-being, or that affects flora, fauna, air, atmosphere, and both public and private property.

In the specific case of water pollution, the law stipulates that it must pose risks to human health, cause harm to terrestrial and aquatic flora and fauna, damage the aesthetic value of natural sites, or interfere with any normal use of water resources.²²

A hierarchy can be observed among the various protected interests. Human health is explicitly identified as the primary objective to be safeguarded. It is followed by other important concerns, such as the protection of ecosystems, biodiversity, environmental quality, and the preservation of public and private property.

This prioritization reflects the legal and ethical emphasis on preserving human life and well-being, while still acknowledging the broader importance of maintaining ecological balance and sustainable environmental use²³.

Beyond the specific interests enumerated in legal texts, pollution is fundamentally regarded as a violation of public order. It can affect both general public order, by threatening public safety and sanitation, and special public order, when a pollution threshold is exceeded, thereby triggering the intervention of specialized regulatory or police measures.

This dual dimension underscores the fact that environmental harm is not only a technical issue, but also a matter of social stability and legal responsibility, calling for both preventive and corrective mechanisms within the legal framework.

B) Distinction between pollution and nuisance:

The distinction between pollution and nuisance is firmly established in both legal doctrine and Algerian law, with each concept having its own specific implications for environmental regulation and legal liability. While pollution generally refers to long-lasting environmental damage caused by human activity, nuisance tends to address more immediate and often temporary disturbances to public or private interest.

1. Distinction in legal doctrine:

It is important in legal doctrine to distinguish between pollution and a closely related concept: nuisance. According to Gabriel Ullmann, the key distinction lies in the persistence or long-term effects of pollution, even after its original source has disappeared. He points out that *"the effects of pollution continue even when the source that caused it has vanished."* A clear example of this is oil spills, where pollution can persist for many years after the initial accident or shipwreck. Similarly, radioactive contamination may last for thousands of years, far beyond the presence of the original emission.

The same applies to water or air pollution caused by certain substances released into the environment. Even after the discharge has stopped, their harmful effects can continue for a long time.

In contrast, nuisances are characterized by their short-lived impact. According to Ullmann, their effects typically end immediately or shortly after the source disappears. For example, noise nuisance ceases once the sound is no longer heard. Visual nuisances disappear when the disturbing element is no longer visible, and light pollution ends as soon as the lights are turned off. Odor nuisances may linger slightly longer, but they usually fade quickly as the unpleasant substances disperse.

2. Distinction in legislation:

Law 03-10 uses the term "nuisance" and dedicates Title IV to it. This includes two types of provisions: one aimed at protection against chemical substances, and the other related to protection against acoustic nuisances. However, neither of these two categories of provisions is connected to water resources. Furthermore, water legislation uses the term "pollution," thereby establishing a distinction between pollution and nuisance with regard to water. Article 44 of Law 05-12 states that the discharge of effluents, spills, or the deposit of any type of material that does not present toxicity or nuisance in public water bodies is subject to authorization.

It should be noted that in comparative law, a clear distinction between the concepts of pollution and nuisance is not always maintained in positive law. For example, environmental law has long recognized that waste management can lead not only to acoustic or olfactory nuisances but also to marine pollution or soil pollution. More recently, Article L. 219-8 of the French Environmental Code regarding the marine environment treats noise or any "sound sources" as a form of pollution. Similarly, regarding the definition of atmospheric pollution, Gabriel Ullman observes that the Declaration of Principles on the Fight Against Air Pollution, adopted by the Council of Europe on March 8, 1968, oddly links pollution and nuisance²⁴. The text states that "air

pollution occurs when the presence of a foreign substance or a significant change in the proportions of its components is likely to cause harmful effects... or create a nuisance or discomfort." Similarly, the Air and Rational Use of Energy Act of December 30, 1996, states that pollution corresponds to the introduction of substances that have harmful consequences on health, nature, climate change, and property, and that may "cause excessive olfactory nuisances"²⁵.

Section 2: Mechanisms of Administrative Law in Combating Pollution:

Within the framework of administrative law, the fight against water pollution is carried out primarily through two essential mechanisms: administrative regulation and public service. Administrative regulation allows authorities to see rules, standards, and restrictions to prevent harmful activities, while the public service ensures the continuous and efficient management of water supply and sanitation systems. Together, these tools form the backbone of the state's role in safeguarding this vital resource.

A) Administrative law enforcement mechanisms to combat pollution:

The control mechanisms to combat pollution can be traditionally divided into prior control measures and subsequent control measures. Therefore, the methods of prohibition and control over environmental impact assessments, as well as the licensing systems, have a preventive regulatory function. On the other hand, systems related to risks and obligations, and finally, risks and administrative penalties.

1 - Prior control measures:

Prior control measures are essential regulatory tools implemented before any activity takes place, especially in sectors that may affect natural resources like water. These measures aim to prevent potential pollution of water resources by assessing risks before the start of projects or activities. Through these early interventions, authorities can ensure that any proposed activity complies with environmental standards, effectively reducing the risk of water contamination and promoting the protection of vital water resources for sustainable development

1- 1 - Prohibition system:

It is a preventive legal tool used by administrative authorities to exercise their regulatory powers. This is manifested in the administrative decision aimed at preventing certain actions due to the risks that arise from engaging in them.

As part of implementing qualitative protection of water resources, the Algerian legislator, through Article 39, states that certain activities — such as agricultural or industrial activities — may be subject to regulation, monitoring, or even prohibition. The article highlights key activities that fall under these measures, including the installation of wastewater pipelines and the release of discharges.

Article 46 of the Water Law also stipulates, as part of pollution prevention and control, the prohibition of a number of activities, including: the discharge of wastewater, regardless of its nature, into wells, pits, water convergence channels, springs, public drinking water sources, dry valleys, and canals. It also prohibits the depositing or burying of unhealthy substances that could contaminate groundwater.

This article reflects a preventive and precautionary approach adopted by Algerian water legislation to preserve the quality of water resources, especially groundwater, which is vital for public health and agricultural use. By prohibiting direct or indirect pollution sources — such as wastewater discharge or burying hazardous materials — the law aims to prevent irreversible damage to underground and surface water systems.

It is worth noting that, according to Article 48 of the aforementioned law, the authority responsible for water resources must take all enforcement measures to stop the discharge of waste or the dumping of harmful substances when water pollution threatens public health. The administration is also required to order the suspension of the activities of the facility causing the pollution until the contamination is eliminated.

Comparative legal systems adopt similar protective measures. For example, the European Union Water Framework Directive (2000/60/EC) imposes strict controls on pollutants entering water bodies and requires member states to identify and control "priority hazardous substances"²⁶.

1- 2- The Environmental Impact Assessment (EIA)

The Environmental Impact Assessment (EIA) system plays a crucial role in ensuring that development projects do not cause irreversible damage to water resources. By requiring a detailed evaluation of a project's potential environmental effects before approval, the EIA helps identify and prevent harmful impacts such as water pollution, over-extraction of groundwater, or disruption of aquatic ecosystems. This is especially important in regions where water is scarce or already under pressure. Through EIA, authorities can impose conditions, demand mitigation measures, or even reject projects that pose significant risks to water quality and availability. In this way, the EIA serves as both a preventive and planning tool, balancing development needs with the sustainable management of water resources²⁷.

The Environmental Assessment system is reflected in Algerian environmental legislation through two key instruments: the Environmental Impact Study and the Risk Assessment Study, which serve as practical applications of this system to evaluate and regulate the potential effects of development projects on the environment. These studies are essentially predictive and evaluative processes aimed at understanding how a proposed activity may affect the surrounding environment. They consider not only ecological impacts but also economic, social, and health-related effects, as well as consequences for various components of the natural environment. Based on this comprehensive analysis, a formal report is prepared and submitted to decision-makers to guide informed planning and responsible project implementation. The goal is to avoid or minimize negative impacts while enhancing positive outcomes. This integrated approach is essential for helping countries achieve sustainable development with the least possible harm to their environmental and human resources.

One of the key characteristics of an Environmental Impact Study is the description of the original condition of the site where the project is to be established. This involves a detailed analysis of natural resources, biodiversity, and other environmental elements, with a particular focus on water resources. By thoroughly assessing the initial state of the environment, the study provides a foundation for understanding the potential risks and impacts of the proposed project on water quality and availability²⁸.

Another essential aspect is the description of the negative impacts that the project may have on the environment, particularly in terms of water pollution. This includes identifying potential

sources of contamination such as wastewater discharge, hazardous materials, or changes in water flow that could harm aquatic ecosystems and public health.

In response to these potential threats, the study also outlines measures to remove or mitigate the negative effects of the project. These mitigation strategies aim to prevent water pollution by proposing solutions such as the treatment of wastewater, the installation of filtration systems, or changes in project design to reduce its environmental footprint. By emphasizing these measures, the study plays a crucial role in preventing the contamination of water resources and promoting sustainable development that protects both natural and human systems.

As for the Risk Assessment Study, it is defined as a process aimed at identifying both direct and indirect risks that may threaten people, property, and the environment as a result of the activities of a given facility. These risks can arise from either internal factors, such as technical failures or operational errors, or external causes, such as natural disasters or neighboring industrial activity. The objective of the study is to outline and support the implementation of technical and organizational measures that reduce the likelihood of accidents and mitigate their consequences. In the context of water resource protection, this includes preventing accidental spills, leaks, or discharges that could contaminate groundwater or surface water. The study also contributes to the development of accident prevention and management strategies, ensuring a rapid and effective response in case of environmental emergencies. In this way, the risk assessment study becomes a vital tool for proactively safeguarding water resources and enhancing the overall resilience of environmental systems.²⁹

Environmental studies, such as the Environmental Impact Study and the Impact Summary, are subject to a set of principles that ensure their credibility and transparency³⁰. First, these studies are subject to official approval: the Minister in charge of the environment grants approval for full Environmental Impact Studies, while the regionally competent Wāli approves the Impact Summaries. In the case of rejection, the decision must be justified, and an appeal can be made before the Minister responsible for the environment. As for the Risk Assessment Study, it is reviewed by a ministerial committee and approved by the Minister for first-category projects, while second-category projects are handled by a provincial committee and approved by the relevant Wāli. At the technical level, environmental authorities at the local level are responsible for ongoing oversight, given the technical nature of the subject.

A second key principle is public participation. Citizens must be informed through public notices posted near the project site and through publication in two national newspapers. The objective is to allow the public to express opinions or concerns about the potential environmental impacts of the project. This principle reflects one of the core foundations of environmental law—the principle of participation—which seeks to enhance transparency and accountability in decision-making.

1-3 -administrative licensing system:

Administrative licensing is an administrative act that takes the form of a unilateral administrative decision, issued based on legislative authorization by an administrative authority — whether it be a pure administrative body or an organization directly affiliated with it. Its issuance is a precondition for carrying out certain activities or establishing organizations or institutions. No freedom, no matter how vital, can be exercised without obtaining this license ³¹.

It can also be defined as the authorization granted by the competent administrative authority to carry out a specific activity that cannot be performed without this approval. The administration issues the license when the necessary conditions, as specified by law, are met ³².

Administrative licensing as a system for water pollution control is a regulatory tool that requires individuals or organizations to obtain formal permission from the relevant authorities before engaging in activities that may impact water resources. This system ensures that any activity with the potential to pollute water bodies—such as industrial waste disposal, wastewater discharge, or construction near water sources—complies with environmental standards and regulations. The license is granted only when the applicant meets the necessary conditions to prevent or minimize pollution, helping safeguard water quality and public health.

2 - Subsequent control measures:

Subsequent control measures refer to regulatory actions taken after an activity or project has begun, specifically focusing on monitoring, enforcing, and correcting any violations that may lead to environmental harm, including water pollution. These measures are vital for ensuring that ongoing projects, especially those with the potential to contaminate water resources, comply with environmental regulations. By addressing issues after they occur, subsequent control measures help mitigate the impact of pollution, enforce penalties for non-compliance, and ensure corrective actions are taken to protect water quality for the long-term.

2-1 The obligation system:

The obligation system is considered a form of subsequent control measures. This system is typically activated after violations or environmental harm have occurred, especially in cases of water pollution. Once a breach is identified, authorities impose corrective actions, such as penalties or requirements for remediation. The purpose of the obligation system is to ensure that the responsible parties address and resolve the damage caused, thus protecting the environment and maintaining compliance with environmental standards."

In this regard, we can cite a few examples of authority: in the case of concessions for the use and exploitation of thermal waters, the concessionaire is required to comply with the technical standards set by the granting authority regarding the treatment, capture, transport, storage, and distribution of thermal water. The concessionaire is also required, according to the same decree, to submit to the control powers exercised by the said authority."

2- 2 regulatory oversight:

Ex-post control refers to the process by which administrative authorities monitor environmental activities after licenses have been issued or operations have commenced. This form of control is essentially corrective and reactive in nature, as it is implemented after the initiation of an activity to ensure compliance with established environmental standards and regulations.

In practice, ex-post control involves regular on-site inspections by environmental inspectors who verify that industrial operations and other potentially polluting activities adhere to legal standards. Authorities carefully review the operational procedures, waste management practices, and overall environmental performance of these facilities. When violations or non-compliance are identified, corrective orders are issued, which may include administrative fines or even the suspension or revocation of licenses.

By enforcing these measures, ex-post control serves as a vital tool in protecting natural resources and public health. It not only holds operators accountable for their environmental impact but also deters potential violations by signaling that non-compliance will result in significant legal and administrative consequences.

Oversight is exercised at the central level by two main ministries: the Ministry of the Environment and Quality of Life, and the Ministry of Water Resources. The former is responsible for a broad range of functions, including the regulation of monitoring and inspection mechanisms related to environmental activities. The Minister of the Environment is specifically tasked with defining the objectives, structure, and necessary means for implementing these control tools within the scope of his or her jurisdiction³³.

As for the Ministry of Water Resources, it also holds extensive powers. The Minister is responsible for ensuring the maintenance and protection of riverbeds, wetlands, and related ecosystems. Furthermore, the ministry oversees the compliance with technical standards in the design and implementation of water infrastructure, particularly those intended for domestic, agricultural, and industrial use. This includes the collection, treatment, storage, distribution, and purification of both freshwater and wastewater³⁴.

2-3 - The preventive administrative sanction:

The preventive administrative sanction is a form of administrative penalty with a protective nature, aiming to preserve public order. It differs from the repressive administrative sanction, which seeks to hold individuals accountable for wrongful conduct. However, it still qualifies as a sanction because it constitutes a significant interference with an individual's freedom, property, or activity. The use of such sanctions by regulatory authorities enhances the effectiveness of the control mechanisms they exercise. This is particularly evident in the environmental field, where administrative sanctions are used to prevent or limit harm to natural resources. In the context of water protection, preventive administrative sanctions serve as a crucial tool to combat pollution and ensure the sustainable management of water resources, safeguarding both public health and ecological balance."

The preventive administrative sanction takes the following forms:

- Administrative suspension of the license: The regulations concerning classified establishments stipulate that if a violation is observed regarding the regulations applied to classified establishments in the field of environmental protection or the specific technical provisions outlined in the exploitation license, a report must be drafted, and a deadline for rectifying the situation is set. At the end of the deadline, the license is suspended."³⁵

- The revocation of a license is considered the most severe sanction that may be imposed by a regulatory authority, as it effectively puts an end to the activities of the institution or individual concerned. It is worth noting that the administrative authority retains the power to revoke licenses—whether contractual or unilateral—even in the absence of an explicit legal provision, when acting in the public interest. In such cases, the license holder may be entitled to compensation. However, the authority may also rely on other justifications set forth in legal texts, such as those applicable to the use of water resources.³⁶

In contrast, when the revocation results from a fault or violation committed by the license holder, no compensation shall be granted.

B) The Role of the Water and Sanitation Utility in Combating Pollution

The water and sanitation service is divided into two main activities: the implementation of the national drinking water policy and the activity of ensuring the preservation of the water environment.

1- The role of water utility in combatting pollution

We will first discuss the evolution of the water utility through its incorporation of the environmental dimension, and then we will examine the reflection of this development in Algerian law.

1-1- Incorporating the Environmental Dimension into the Water Service:

The role of public utilities in environmental protection has become increasingly significant in the face of growing ecological challenges. Among the most critical sectors in this context are water supply and sanitation services, which are fundamental in the fight against pollution. As public service institutions, these utilities are not only responsible for ensuring access to clean water and proper wastewater treatment but also play a preventive and corrective role in protecting water resources from contamination. Through effective management, strict compliance with environmental standards, and continuous infrastructure development, water and sanitation utilities contribute directly to the preservation of ecosystems, the reduction of health risks, and the promotion of sustainable development. Their mission, therefore, extends beyond basic service delivery to encompass a broader public interest objective: safeguarding the environment for current and future generations.

In comparative law, the alignment of public water supply and sanitation services with environmental objectives has occurred gradually. These services initially served public health purposes—particularly hygiene and disease prevention. The fight against water pollution was originally considered primarily to ensure cleaner and safer drinking water. These two functions are intrinsically linked, as “the sustainability of sanitary uses of water has always been connected to the quality of natural aquatic environments, which provide the essential raw material for the settlement of human populations and the development of their activities.”³⁷

While the provision of potable water by public utilities fulfills a key sanitary function, it represents just one of many water uses—others include agriculture, navigation, and fishing. This highlights the idea that there is not one single "environmentally-focused water law," but rather a broader "law of waters" shaped by the objectives of various overlapping regulations.

However, environmental law does not aim to replace this system, but rather to layer or superimpose an overarching environmental policy on existing water governance frameworks³⁸. This shift has contributed to the emergence of a more ecosystem-based water law, which seeks to manage water resources holistically, in line with sustainability and ecological preservation principles.

In French law, public services responsible for drinking water distribution and sanitation have gradually been integrated into a broader national water policy. This process was formally initiated by the landmark Law No. 64-1245 of December 16, 1964, concerning the management and allocation of water resources and the fight against water pollution. Widely recognized as the first law of integration, it marked a turning point by placing water-related public services within a comprehensive legal and regulatory framework aimed at coordinated water resource management.

This legislative shift laid the foundation for treating water not merely as a public utility service, but as a strategic environmental and societal concern requiring unified oversight, planning, and protection measures.

1-2 Reflecting the Environmental Dimension in the Water Service under Algerian Law:

The Algerian water utility (ADE) is responsible for a wide range of activities related to the management and protection of water resources. One of its key functions is overseeing the production of potable (drinking) water and industrial water. This involves the extraction and purification of water from natural sources, ensuring that it meets health and safety standards for consumption and use in various industries. The utility must balance the demand for water with the available supply while ensuring quality control ³⁹ .

Once produced, the water must be safely transported through pipelines and stored in reservoirs before it reaches consumers. The water utility manages the construction, maintenance, and operation of these infrastructure components, ensuring that water remains clean and safe during transportation and storage. Any potential sources of contamination during these processes are minimized through regular monitoring and preventive measures.

Water treatment is another crucial responsibility of the utility. It involves removing impurities, harmful chemicals, and pathogens from water to ensure its safety for consumption. The water utility employs various treatment processes, such as filtration, disinfection, and chemical treatments, to guarantee that the water meets health standards. This process helps prevent waterborne diseases and ensures the water is suitable for both human consumption and industrial use.

The utility is also tasked with the renewal and development of the infrastructure that supports the entire water distribution system. This includes upgrading old pipelines, treatment plants, and storage facilities to meet growing demand, improve efficiency, and reduce the risk of leaks or contamination. Regular infrastructure updates are vital for maintaining water quality and preventing disruptions in the service.

A critical responsibility of the water utility is the regular monitoring of water quality. The utility conducts tests to assess the presence of pollutants, chemicals, and microorganisms in the water, taking corrective action if necessary. This monitoring is an essential aspect of pollution control, as it helps to detect any potential contamination and take immediate steps to address it.

The utility is also responsible for setting and enforcing water quality standards. It establishes and adheres to specific norms and regulations to ensure that the water distributed to consumers meets legal and health guidelines. By doing so, the utility contributes to pollution control by preventing the distribution of contaminated or harmful water.

Through these comprehensive responsibilities, the water utility plays an essential role in both maintaining the safety and availability of clean water and actively contributing to pollution control by preventing contamination throughout the water supply chain.

2- The public sanitation service:

Despite the important role played by the water utility, which is undertaken by the Algerian Water Authority, it does not compare to the role performed by the sanitation service, represented by the Water Sanitation Office.

The public drinking water service and the public sanitation service do not serve the same function in preventing pollution and environmental nuisances.

The environmental impact of the public drinking water service is relatively limited, as its primary focus lies in public health. While protecting water catchment points helps prevent water pollution, such efforts are typically restricted to a defined area along a watercourse, aiming to safeguard the sanitary quality of potable water distribution.

In reality, the core of pollution and nuisance prevention occurs upstream of the public water supply system—through efforts to achieve and maintain the ecological health of water bodies. This responsibility generally falls to other institutions, such as water agencies, which fund activities aimed at promoting the balanced and sustainable management of water resources and aquatic ecosystems, as well as ensuring drinking water supply and flood management. These actions are primarily financed through fees collected from users of the public water management service.⁴⁰

On the other hand, the public sanitation service plays a significantly more direct and advanced role in preventing environmental nuisances caused by domestic water use. Through a specialized administrative oversight, it enforces compliance with regulations related to non-collective sanitation systems. Moreover, by treating wastewater in sewage treatment plants and returning it—when possible—safely to the natural environment, and even enriching soils with treated sewage sludge through land spreading, the sanitation service takes on a strong environmental dimension. It promotes a virtuous recycling cycle by closing the loop between consumption and sustainable reuse.

This functionality is also confirmed in Algerian law through one of the objectives established by Water Law No. 05-12, which stipulates the preservation of public hygiene and the protection of water resources and aquatic environments from pollution risks by collecting and treating domestic and industrial wastewater, as well as rainwater and runoff in urban areas.

The responsibility for water sanitation in Algeria is entrusted to the National Office of Sanitation (Office National de l'Assainissement, ONA). This organization is tasked with combating pollution sources within its jurisdiction and managing all facilities dedicated to urban wastewater treatment. Its duties encompass the operation, maintenance, renovation, and construction of sanitation infrastructure, including wastewater collection networks, pumping stations, treatment plants, and marine outfalls⁴¹.

The water and sanitation service can be delegated, as stipulated by the Water Law. Article 104 of Law 05-12, mentioned above, specifies that the administration responsible for water resources, acting on behalf of the state or the concessionaire, can delegate all or part of the management of public water or sanitation services to public or private operators. This means that the role of the delegating authority shifts to overseeing and regulating the delegated entity.

Conclusion:

In conclusion, the study has demonstrated that safeguarding water resources from pollution within the framework of administrative law requires an integrated approach combining preventive and corrective mechanisms. The analysis has shown that prior administrative controls, particularly prohibition measures, environmental impact and risk assessment studies, and administrative licensing, play a fundamental preventive role by ensuring that potentially harmful activities comply with environmental requirements before their implementation. At the same time, subsequent control mechanisms, including administrative oversight, corrective obligations, and administrative

sanctions, provide the necessary means to address violations, limit their consequences, and ensure compliance with applicable environmental standards.

The study has also demonstrated that the fight against water pollution cannot be achieved solely through administrative regulatory mechanisms. Public water and sanitation services constitute an essential component of this framework. While the water utility contributes to protecting water quality through water treatment, quality monitoring, infrastructure management, and the prevention of contamination throughout the water supply chain, the public sanitation service plays a particularly significant role through the collection and treatment of domestic and industrial wastewater and the management of sanitation infrastructure. The effectiveness of water pollution control therefore depends on the complementarity of administrative regulation and public services, as well as on effective coordination between the competent institutions.

In light of these findings, the effectiveness of the Algerian framework for combating water pollution could be further enhanced by strengthening administrative oversight and inspection mechanisms, particularly with regard to activities likely to affect water resources. Greater coordination should also be established between the competent environmental and water authorities and the institutions responsible for water supply and sanitation. In addition, environmental impact and risk assessment procedures should be accompanied by effective subsequent monitoring to ensure that the preventive requirements imposed before the commencement of activities are actually respected throughout their operation. Finally, continued development, modernization, and maintenance of wastewater collection and treatment infrastructure should be given particular attention, given the direct contribution of sanitation services to the prevention of water pollution.

Ultimately, the effectiveness of the administrative framework for combating water pollution depends not only on the existence of legal and regulatory mechanisms, but also on their effective implementation, continuous monitoring, and institutional coordination. Strengthening these elements would contribute to improving the effectiveness of pollution control policies and ensuring the sustainable management and long-term protection of Algeria's water resources for present and future generations.

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¹ World Health Organization. (2017). Guidelines for drinking-water quality (4th ed.)

² Directive 91/676/CEE du 12 décembre 1991, préc. Autres exemples : la loi n° 96-1236 du 30 déc. 1996 sur l'air et l'utilisation rationnelle de l'énergie met l'accent sur cette dernière cause de pollution, préc. ; la Convention internationale pour la prévention de la pollution par les navires, dite MARPOL, du 2 nov. 1973 modifiée en 1978.

³ Loi n 03-10 du 19 juillet 2003 relative à la protection de l'environnement dans le cadre du développement durable, JORADP du 20 juillet 2003 .

⁴ ULLMANN G., Les installations classées. Deux siècles de législation et de nomenclature, t. 1-2, Cogiterra Éd., 2015.

⁵ Ismail Najm al-Din Zankana, "Environmental Administrative Law: A Comparative Analytical Study", Dar Al-Halabi Legal Publications, 2012, p. 67.

⁶ <https://online.ecok.edu/articles/causes-of-water-pollution> (consulted on 09/04/2025) .

⁷ <https://atlas-scientific.com/blog/sources-of-water-pollution/?srsltid=AfmBOoq8CAG8AZLZ4OinF7WOMFS7daJ7yiXlBm6tvW3bl1ZBY0MPziH-> (consulted on 09/04/2025) .

⁸ BEURIER J.-P., Droit international de l'environnement, Pedone, 5e éd., 2017,, p. 134.

⁹ Articles R. 1321-9 et R. 1322-16. And Articles L. 211-5-1 et R. 211-6, 2°, f.

¹⁰ Accidental pollution is addressed under Law 05-12 within the framework of environmental prevention and protection measures. This legislation specifically incorporates accidental pollution into its broader strategy for pollution control, particularly through the Water Quality Protection and Restoration Plan. The aim is to anticipate and respond to such incidents by reinforcing the legal and institutional mechanisms dedicated to safeguarding water resources.

¹¹ CA de Versailles, 8 jan. 2009, n° 07/02442 ; à propos de l'affaire du naufrage de l'Erika. 44 CASS, civ. 2e, 27 mai 1999, n° 97-19.704.

45 CASS, civ. 2e, 24 fév. 2000, n° 98-17.861.

¹² BEURIER J.-P., *Droit international de l'environnement*, préc., p. 134.

¹³ ULLMANN G., *Les installations classées. Deux siècles de législation et de nomenclature*, t. 1 : Le décret fondateur du 15 octobre 1810 et la loi du 19 décembre 1917, la protection progressive des droits du tiers, préc., p. 21.

¹⁴ ULLMANN G., *Les installations classées. Deux siècles de législation et de nomenclature*, t. 1 : Le décret fondateur du 15 octobre 1810 et la loi du 19 décembre 1917, la protection progressive des droits du tiers, préc., p. 21.

¹⁵ Loi n° 01-19 du 12 décembre 2001 relative à la gestion, au contrôle et à l'élimination des déchets, JORADP du 15 décembre 2001.

¹⁶ (RAMADE F., « Pollution », préc.)

¹⁷ BEURIER J.-P., *Droit international de l'environnement*, préc., p. 135.

¹⁸ Adeline Meynier, *réflexions sur les concepts en droit de l'environnement*, thèse de doctorat en droit public Université Jean Moulin 3, soutenue le 11/12/2017, p. 265

¹⁹ DE SADELEER N., *Les principes du pollueur-payeur, de prévention et de précaution. Essai sur la genèse et la portée juridique de quelques principes du droit de l'environnement*, préc., p. 71.

²⁰ Adeline Meynier thèse précitée, p. 266.

²¹ NAIM-GESBERT É., *Droit général de l'environnement*, préc., p. 243.

²² Article 02 de la loi 03-10 précitée

²³ BEURIER J.-P., *Droit international de l'environnement*, préc., p. 135. Seul l'article L. 219-8 du Code de l'environnement relatif à la pollution du milieu marin ne cite pas la santé comme le premier objectif à protéger, mais en second après la protection de l'environnement.

²⁴ ULLMANN G., *Les installations classées. Deux siècles de législation et de nomenclature*, t. 1, préc., p. 23.

²⁵ Article 2 de la loi n° 96-1236 du 30 déc. 1996, préc.

²⁶ <https://eur-lex.europa.eu/eli/dir/2000/60/oj?locale=fr> (consulted on 09/04/2025).

²⁷ Despax Michel, *Droit de l'environnement*, LITEC, Paris, 1980, p. 160.

²⁸ Mabtouche El-Hadj and Aabidi Kader, "Study of the Environmental Impact of Classified Installations in Algerian Legislation," *Journal of Judicial Interpretation*, Volume 13, 2021, p. 843..

²⁹ Executive Decree No. 06-198, Article 12

³⁰ Mabtouche El-Hadj and Aabidi Kader, "The Previous Article," p. 845.

³¹ Azawi Abdelrahman, "The Legal System for Establishments... for Environmental Protection," Library of Legal and Administrative Sciences, Algeria, 1st edition, 2003, p. 40.

³² Tarek Ibrahim El Desouki Atia, "Environmental Security - The Legal System for Environmental Protection," Dar Al-Jamia Al-Jadida, Egypt, 2009, p. 355.

³³ Executive Decree No. 25-104 dated March 24, 2025, specifying the powers of the Minister of Environment and Quality of Life, Official Gazette dated March 24, 2025.

³⁴ Executive Decree No. 16-88 dated March 1, 2016, Official Gazette dated March 9, 2016.

³⁵ Article 23 of Executive Decree No. 06-198 mentioned above

³⁶ Article 86 of the Water Law

³⁷ M. DESPAX, *La pollution des eaux et ses problèmes juridiques*, Paris, Litec, 1968.

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³⁹ Executive Decree No. 01-101 dated April 21, 2001, establishing the Algerian Water Company, Official Gazette dated April 22, 2001.

⁴⁰ Rami Radiguet ,le service public environnemental ,doctorat de l'université de toulouse ,2016 P196

⁴¹ Executive Decree No. 01-102 establishing the National Sanitation Office, dated April 21, 2001, Official Gazette dated April 22, 2001.

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