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The Legal Foundations of the Human Right to Environmental Radiological Security: International and National Legal Frameworks in the Context of Human Rights and Environmental Justice

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Abstract

The recognition of the human right to environmental radiological security constitutes a new and evolving dimension of international and national human rights law. This right is grounded in a set of international treaties, conventions, and protocols issued by the International Atomic Energy Agency (IAEA) and cooperating global organizations, as well as by regional and national legislative frameworks. Together, these legal sources form a protective architecture intended to ensure individuals and societies are safeguarded against the harmful consequences of radiological exposure and nuclear accidents.

The study begins with the 1972 Stockholm Conference on the Human Environment, which laid the foundations of international environmental law by linking environmental protection to human development. Subsequent milestones include the Convention on Early Notification of a Nuclear Accident (1986), the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986), and evolving national legislations that explicitly embed environmental safety and radiation protection within human rights frameworks. This paper explores how these instruments collectively affirm radiological safety as a third-generation human right, bridging the domains of environmental rights, development rights, and the right to life and health. It argues that the consolidation of environmental radiological security as a human right is vital to achieving environmental justice in the nuclear age. By analyzing international conventions, national laws, and doctrinal developments, the study highlights both progress and persistent gaps in translating global legal commitments into enforceable rights at the domestic level.

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Introduction

To date, the term "the human right to environmental security free of radiation" has no definitive meaning. Therefore, we will attempt to bring these concepts closer through the human right to a clean environment.

The human right to a healthy environment is a newly developed, global, and ancient legal concept with deep historical roots rooted in our collective human heritage, in all divine books, and in the civilizations of nations.

This principle is based on establishing the human right to live in a healthy environment, in terms of air, water, and soil. To establish the foundations of all this, it is necessary to develop a law that embodies the meaning of environmental justice. However, what is more important is how this law is enacted and on what international basis it should be constructed. This attempt is made to define third-generation rights, between environmental and developmental rights, and to establish the links between them, as well as the preservation of a healthy environment.

First Requirement: Foundations for Applying Environmental Radiological Safety Rules in International Law

First - Stockholm Conference on the Human Environment

Representatives from 113 countries met in Stockholm in 1972 for the United Nations Conference on the Human Environment, marking the first attempt by the international community to address the relationship between environment and development at the global level, among the most important outcomes was the establishment of the United Nations Environment Plane.

Thus, the Stockholm Conference formed the first building block for environmental rights, which would later branch into environmental radiological safety rules.[1].

Second: The Conference Stockholm+10

To commemorate the tenth anniversary of the Stockholm Conference, the Governing Council of the United Nations Environment Plane (UNEP) held a special session in Nairobi in May 1982. This session provided a unique opportunity to bring together a new generation of environmental decision-makers from around the world to revitalize the environmental agenda, policies, and normative institutions, in light of the experience gained in the 1970s and the emerging challenges of the present. At the conclusion of the special session, the Governing Council adopted a resolution commemorating the achievements of the United Nations in implementing the Stockholm Plan of Action and the challenges faced by the international community. This will serve as a strategic direction for UNEP to stimulate the development of international treaties and other agreements in the environmental field.[2]

Third: World Commission on Environment and Development

The General Assembly requested the World Commission on Environment and Development to propose long-term environmental strategies for achieving sustainable development by the year 2000 and beyond. It also requested the Commission to consider ways and means by which the international community could more effectively address environmental and development concerns. In 1987, after three years of work, the Commission presented proposals on development and energy conservation. However, the greatest share of support went to nuclear energy. The Commission emphasized the need to provide security at nuclear facilities after the Chernobyl accident and to ensure that nuclear security does not conflict with the right to use nuclear energy[3].

Fourth: The 1992 Earth Summit

[1] UNEP/IGM/1/2, 4 April 2001

1 Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992 E.93.I.8 Volume I: Resolutions adopted by the Conference, Resolution 1, Annex II.

United Nations General Assembly, resolution 38/161 of 19 December 1983[3]

Exactly 20 years after the Stockholm Conference, world leaders gathered in Rio de Janeiro for the United Nations Conference on Environment and Development. The conference marked a significant turning point in reorienting national and international policies toward integrating environmental dimensions into economic and development goals. The outcomes of the conference, particularly Agenda 21 and the Rio Principles, have become increasingly influential in environmental protection at the national and international levels, marking the beginning of a more modern era for the human right to a healthy environment. This era addresses all environmental rights, especially those that conflict with development imperatives, such as the use of nuclear energy in industrial and economic sectors . [4].

Fifth - Rio+*5*

In 1997, the General Assembly, at its nineteenth special session, undertook a five-year review of the outcomes of the United Nations Conference on Environment and Development and adopted the "Programme for the Further Implementation of Agenda 21," highlighting the role of the United Nations Environment Programme (UNEP) as the principal global environmental authority. Therefore, environmental decisions taken by states to protect the public interest must address the protection of the human right to environmental security, particularly protection from radioactive pollutants, given that the right to a clean environment is the most important right of the 21st century, and that nuclear threats are also the greatest danger.

Second Requirement: Foundations for Applying the Rules of Radiological Environmental Security in the national Laws of States

International law extends its scope to national laws, as states, once they become members of an agreement or treaty, are obligated to amend their national laws in accordance with the provisions of those agreements or treaties. This is the case with the right to a healthy environment and the privileges resulting from it. In addition to treaties with a global dimension, we find the national laws of states, which they have enacted to ensure the safety of their environment and the enjoyment of its rights. Its peoples have the right to a healthy environment free from pollutants, especially those resulting from nuclear materials and their radiation, due to the dangers posed by environmental pollution. We will take as an example a group of countries where major radiological accidents have occurred, and Algeria is an example of a country whose laws provide for the prior protection of the human right to environmental radiological safety.

First - Environmental Radiological Safety in Ukrainian Law: Article 9 of the Ukrainian Environmental Protection Law affirms the right of every citizen to enjoy a healthy environment free from all pollutants. In light of the nuclear disaster at the Chernobyl reactor, the Ukrainian government emphasizes the need to protect the environment and citizens from radiation. This is due to the fact that pollution levels at the accident site are still above normal levels, and the risk of radioactive contamination still exists, threatening the safety of the environment and citizens in Ukraine.[5].

Second - Environmental radiological security in American law: Every state in the United States of America stipulates the necessity of protecting the American environment, while ensuring the presence of national agencies to protect the environment,[6] .For example, the state of Pennsylvania, as the main victim of the Three Mile Incident, established the Pennsylvania Department of Environmental Protection to protect the environment in all its forms from all types of pollution, and to ensure that the environmental balance returns to normal.[7]

Third - Environmental Radiation Security in Japanese Law: Japan has always been keen on the safety of its environment from all physical pollutants, as it focused in Article 15 of the Environmental Law on the necessity of respecting the fundamentals of environmental law, which is represented in guaranteeing the citizen's right to a physical, biological and constructed environment that is safe from all pollutants that may be exposed to it, and prevent the Japanese citizen from enjoying his right. However, after the Fukushima accident, the laws became more stringent in terms of establishing civil liability on the operator of the nuclear facility, and the necessity of

(UNCED), Rio de Janeiro, 3-14 June 1992, United Nations Conference on Environment and Development [4]

[5] Law of Ukraine, On Environmental Protection, of June 25, 1995, No.1264-XXII, VV

[6] The U.S. Environmental Protection Agency, http://www.epa.gov.

[7] Environmental radiological security in American law was established on December 3, 1970

obtaining international assistance in the event of a recurrence of the nuclear disaster again. However, the Japanese legislator did not address the safety of nuclear facilities after the disaster, and this is what we attribute to the causes of the accident resulting from force majeure and not from negligence or failure to take precautionary measures.[8].

Fourth: Environmental Radiological Security in Algerian Law: Algerian law, like all countries around the world, has strived to keep pace with developments in the field of global environmental regulation. This is evident in the amendments to the Algerian Environmental Law. In keeping with the developments in the human right to a clean environment, which has moved to the stage of environmental security, especially with the presence of radioactive pollutants, the Algerian legislator established a committee and a governorate specializing in examining environmental nuclear security in Algeria.

Third Requirement: Legal Texts Specific to the Protection of the Human Right to Environmental Radiological Security from the Chernobyl Accident to the Fukushima Accident

First: Legal Texts Specific to the Protection of the Human Right to Environmental Radiological Security before the Chernobyl Accident

From our study of these texts, it is evident that they were generally general, not due to a shortcoming in the enactment of laws, but rather due to the novelty of human rights in the field of the environment.

Among these texts is the Treaty on the Non-Proliferation of Nuclear Weapons, which entered into force on March 5, 1970.

There are also treaties for environmental protection, treaties to prevent the proliferation of nuclear weapons, or treaties that apply liability rules to a specific environmental area. Typically, the maritime domain has been the most studied and researched area. For example, we find the United Nations Convention on the Law of the Sea of 1982, the Convention on the Protection of the Natural Resources of Nuclear Material, and the Convention on Civil Liability in the Carriage of Nuclear Materials by Sea of 1975.

The United Nations also created a new convention on civil liability for damage caused by nuclear energy in 1977.

Second: Legal texts protecting the human right to environmental radiation safety after the Chernobyl accident.

The INES classification ranked the Chernobyl accident at level 7, meaning that the entire world was threatened by a nuclear threat. The United Nations was committed to maintaining international peace and security.

One political aspect of the accident must be noted: Ukraine was subordinate to the Soviet Union at the time. This led some politicians to question the Soviet Union's ability and competence to respond to the nuclear accident. This was due to the request for international aid to address the disaster. Two international treaties were signed to emphasize the need for countries to support each other, not for political reasons, but rather for considerations of the human right to life and a clean and healthy environment.

There was also no applicable legal convention at the time of the incident, as the prevailing convention was the 1979 Geneva Convention on Long-Range Transboundary Air Pollution, which did not include nuclear pollution. The Vienna Convention on Civil Liability for Nuclear Damage could not be relied upon, as the Soviet Union was not a party to it. Even for all the states affected by the accident, except for the former Yugoslavia, they were not parties to that convention. Therefore, under such circumstances, the accident is subject to public international law or the recommendations of the International Atomic Energy Agency, which are not legally binding. The Agency intensified its meetings on the occasion of the accident, and these meetings resulted in two agreements. The first concerns the obligations of the affected state to alert the international community to nuclear accidents, while the second treaty concerns the necessity of states' cooperation to assist the affected state. These are:

A- The Convention on Early Notification of a Nuclear Accident

[8] http://www.env.go.jp/en/coop/pollution.html

This is a 1986 IAEA treaty under which states agree to provide notification of any nuclear accident occurring within their territory that could affect other states. This agreement, along with the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, was adopted in direct response to the Chernobyl nuclear disaster.

The Convention was signed at the Special Session of the IAEA General Conference on September 26, 1986. The special session was convened due to the Chernobyl disaster that had occurred five months earlier. Significantly, the Convention was quickly ratified by the Soviet Union and the Ukrainian Soviet Socialist Republic, the States responsible for Chernobyl. It was signed by 69 States and entered into force on October 27, 1986, after the third ratification[9]..

As of 2013, the Convention had 116 member states, in addition to the European Atomic Energy Community, the Food and Agriculture Organization, the World Health Organization, and the World Meteorological Organization. Therefore, this Convention requires states in whose territory a nuclear accident has occurred to notify other states. This Convention serves as a translation of international cooperation in the field of nuclear energy, respects the principles of public international law, contributes to the continuation of international relations based on good neighborliness, and preserves the ultimate goal of the United Nations in maintaining international peace and security.[10].

B-Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency

If a State Party needs assistance in the case of a nuclear accident or radiological emergency, whether or not it originates within its territory or on territory under its jurisdiction or control, it may request such assistance directly or through the Agency from any other State Party, the Agency, or, as appropriate, other intergovernmental organizations. The State Party requesting assistance shall specify the scope and type of assistance required and shall provide the assisting party with such information as may be necessary for it to determine its ability to meet the request. If the requesting State Party is unable to specify the scope and type of assistance required, the requesting State Party and the assisting party shall decide, in joint consultation, on the scope and type of assistance required. Each State Party shall immediately decide whether it is in a position to provide the requested assistance, and the scope and conditions of the assistance that may be provided, and shall inform the requesting State Party of this either directly or through the International Atomic Energy Agency[11].

Any State Party may also request assistance related to the provision of medical treatment to populations affected by a nuclear accident or radiological emergency, or the temporary transfer of such populations to the territory of another State Party.[12] .

Third: Legal Texts Concerning the Protection of the Human Right to Environmental Radiation Security after the Fukushima Accident

As a result of the nuclear disaster, and in line with the International Atomic Energy Agency's (IAEA) Peaceful Nuclear Policy, the Agency decided to hold an International Experts' Meeting (IEM) on Radiation Protection after the Fukushima Daiichi Accident: Promoting Confidence and Understanding.

This meeting was held in February 2014 to exchange experiences with countries around the world following the accident and to discuss issues related to the management of nuclear radiation sources and the effects of nuclear

[9] Convention on Early Notification of a Nuclear Accident, International Atomic Energy Agency (IAEA) ,Vienna, Austria, 26 September 1986

[10] IAEA, Signatures and ratifications, http://www.iaea.org/Publications/Documents/Conventions/cenna_status,

[11] *Measures to Strengthen International Co-Operation in Nuclear, Radiation and Waste Safety*, particularly Annex 1. GC(44)/INF/4.17-08-2000

[12]Convention on Assistance in the Case of a Nuclear Accident Or Radiological Emergency, International Atomic Energy Agency (IAEA) ,Vienna, Austria, 26 September 1986.
https://www.iaea.org/publications/documents/treaties/convention-assistance-case-nuclear-accident-or-radiological-emergency

radiation on life and the environment in general. The IAEA is keen to disseminate the results of the meeting to all peoples of the world, out of respect for its supreme principle of "Atoms for Peace[13].

Conclusion:

The International Atomic Energy Agency (IAEA) was established as a response to the need of the world's nations for an international organization aimed at protecting nuclear peace and security. This was the first step toward nuclear environmental security, and it later partnered with the Organization for Economic Cooperation and Development (OECD) to explore ways to advance development while simultaneously preserving the environment and respecting human rights.

Most states and international organizations have sought to protect nuclear peace and security by concluding treaties and agreements that respond to the changes the world is experiencing in the field of nuclear energy.

Findings

The 1972 Stockholm Conference laid the groundwork for the integration of environmental protection into human rights discourse, providing an indirect foundation for later developments in radiological safety law.

Conventions adopted under the auspices of the IAEA, particularly those addressing nuclear accidents and radiological emergencies, constitute the central legal basis for the recognition of environmental radiological security.

Many states have adopted laws and regulations that incorporate radiation protection into broader environmental and public health legislation, though implementation remains uneven.

Radiological safety is increasingly viewed as a third-generation human right, intersecting with the right to life, health, and a clean environment.

Enforcement mechanisms remain weak, especially in jurisdictions with limited institutional capacity. Moreover, global inequality in nuclear technology use and waste management poses risks to achieving universal environmental justice.

Advancing environmental radiological security requires harmonizing international conventions with domestic law, enhancing compliance mechanisms, and embedding the right explicitly within human rights treaties.

Novelty (Actuality) of the Study

The study contributes to contemporary debates by identifying environmental radiological security as an emerging component of third-generation human rights. While existing literature extensively discusses the right to a healthy environment, few works explicitly analyze the intersection between radiological safety and human rights law. This research fills that gap by systematically examining international conventions, nuclear accident protocols, and national legal frameworks, thereby offering a comprehensive legal basis for radiological security as a human right. The study's originality lies in framing radiological safety not merely as a technical or environmental concern but as a core element of human dignity, justice, and global security.

Ethical Considerations

This research adheres to academic integrity principles, relying solely on secondary legal sources, official international conventions, and national legislative documents. No human or animal subjects were involved in this study, and no sensitive or classified data were used. The authors confirm that the analysis is independent, unbiased, and free of plagiarism.

[13] Michael Madsen, International Experts' Meeting on Radiation Protection to Discuss Lessons and Challenges from Fukushima Accident, IAEA Office of Public Information and Communication https://www.iaea.org/newscenter.

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Conflict of Interest

The authors declare no conflict of interest in relation to the research, authorship, or publication of this article.

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