

# NUCLEAR LAW AND RADIOLOGICAL ACCIDENTS



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## Abstract

### NUCLEAR LAW AND RADIOLOGICAL ACCIDENTS.

Nuclear activities in Brazil, and particularly the radiological accident of Goiânia, are examined in the light of the environmental and nuclear laws of Brazil and the issue of responsibility. The absence of legislation covering radioactive wastes as well as the restrictions on Brazilian States to issue regulations covering nuclear activities are reviewed. The radiological accident and its consequences, including the protection and compensation of the victims, the responsibility of the shareholders of the Instituto Goiano de Radioterapia, operator of the radioactive source, the provisional storage and the final disposal at Abadia de Goiás of the radioactive waste generated by the accident are reviewed. Finally, nuclear responsibility, the inapplicability of the Law 6453/77 which deals with nuclear damages, and the state liability regime are analyzed in accordance with the principles of the Brazilian Federal Constitution.

## 1. INTRODUCTION

Our review of the radiological accident in Goiânia ten years ago is based on the provisions of the Nuclear Law and Environmental Law.

In Brazil, the principles and rules established by the Federal Constitution of 1988 and by federal legislation, such as the National Environment Policy (Law 6938/81 as amended by Law 7804/89) provide the necessary legal compensation framework for all damages to the environment.

Chapter VI of the Federal Constitution (FC) deals with the environment. Some of the provisions of this chapter address nuclear activities, and one of them defines the competence of the Union to legislate on the siting of nuclear power plants (FC, Article 222, Paragraph 6).

In the Constitution, several provisions link nuclear activities and environmental issues (Article 21, XXIII, Article 49, XIV, Article 177, V and Article 225, Paragraph 6). For the purposes of our discussion, the Nuclear Law and the Environment Law will be considered jointly, as they are components of the same national legal framework.

## 2. SHARING RESPONSIBILITIES

Certain legal scholars, among which Paulo Bessa Antunes, do not consider that Nuclear Law and Environmental Law are related, but rather, that Nuclear Law is a branch of Energy Law, itself a part of Economic Law, and that Environmental Law remains separate because of its humanistic character and orientation. Antunes believes that it is impossible to combine environmental and nuclear issues, unless the issue relates to nuclear damage and its consequences to the environment. By contrast, other law experts consider that nuclear issues can have environmental consequences and therefore, believe that nuclear issues fall within the scope of environmental law.

Legal experts have pointed out that nuclear energy was treated separately by the Constitutional Assembly. The Federal Constitution provides principles and rules covering

nuclear activities. In this sense, the provisions covering the responsibility of the Union to issue regulations on nuclear activities should be taken to be restrictive, rather than transmissible by delegation. How can these provisions be harmonized with the provisions of environmental law? This is not an easy question, and there is no common understanding on this issue.

In environmental law for instance, common responsibilities are shared by the Union, States, Federal District and Municipalities for the purpose of avoiding the spread of damage in matters of pollution.

The Federal Constitution provides that the control of nuclear activities should be exercised solely by the Union, account taken of the importance of the matter and the associated risks. Therefore, nuclear activities are performed by the Union and the agencies under its responsibility.

We submit that the general provisions about environmental issues, particularly the control of pollution, should not be applied to nuclear activities — the installation of a nuclear power plant on the territory of any State or Municipality, for example, must not be denied by State or local authorities. More conservative restrictions can be applied by legal provisions at the State or local levels to mitigate the risk of pollution. But these provisions should not prohibit or ban nuclear activities on their territories. This would allow States and Municipalities to establish their own criteria and restrictions for the installation and operation of all nuclear-related activities, within the limits of the Federal Constitution. In this regard, States and Municipalities can promulgate their own legislation to assure good standards of environmental quality, within the limits of the Federal Constitution. But, as already suggested, their competent legislation should not be an obstacle for the development of national nuclear policy.

The importance of regulating the control, management and surveillance of radioactive waste at the federal, state and local levels must not be overlooked. Management includes the activities of control and surveillance of radioactive wastes, as provided in Chapter 22 of Agenda 21, adopted during the United Nations Conference on Development and Environment, in Rio de Janeiro, in June 1992.

In Brazil, pursuant to the Nuclear Energy Policy Act (Law 6189/74 as amended by Law 7781/89) the Brazilian Nuclear Energy Commission (also known as CNEN, its acronym in Portuguese) has the responsibility to receive and dispose of radioactive waste. However, since the early 1980s, a bill is under discussions at the National Parliament on the site selection process for the disposal of radioactive waste. At the present time, this bill should be analyzed bearing in mind the IAEA Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, adopted in September, 1997, of which Brazil is a signatory.

The acceptance by the public of nuclear activities and, particularly, of their ‘back end’, as radioactive waste is referred to, is not a very simple issue. People used to say about radioactive wastes that they should be disposed of anywhere, provided this was “not in my back yard”. This formula has been adopted everywhere around the world, as well as in Brazil. This attitude is reflected in the Constitutions of the States of Brazil, some of which contain provisions for banning all nuclear activities, including nuclear power plants or radioactive waste repositories. Article 241 of the Constitution of the State of Piauí, for instance, provides that the deposit of radioactive waste within its territory cannot be accepted when the radioactive waste is produced in any other part of the Federation. Article 153 of the Constitution of the State of Rio Grande do Norte provides that the State will, in accordance with the limits established by federal legislation, enact legislation covering the provisional or permanent storage on its territory of radioactive waste arising from any activity.

For its part, the Constitution of Goiás, the State where the radiological accident occurred, contains in Article 131, Paragraph 2 a “prohibition to install nuclear power plants to produce, to store and to transport any kind of nuclear arms (...)”, while Paragraph 1 of this Article provides that “radioactive wastes, hazardous products, wastes from the health institutions and others hazardous wastes should be disposed of pursuant to the law and in accordance with the scientific criteria”.

As indicated earlier, the precautionary attitude of the constitutional legislator with respect to the final disposal of radioactive waste on all of Brazilian territory is consistent with the principles of the Federal Constitution, which solely entitle the Union to enact laws in matters of nuclear energy.

In this regard, the major focal points of the nuclear related legislation were the radiological accident involving the caesium-137 source, radioactive waste produced by the nuclear power plant and radwaste generated by the nuclear fuel cycle.

For the radioactive waste generated by the accident in Goiânia, a repository was built in Abadia de Goiás, on the outskirts of Goiânia. For the siting and installation of this repository, established solely for the purpose of receiving the radioactive waste generated by the Goiânia accident, environmental and nuclear safety licensing procedures were applied. The repository is part of a Regional Centre for Nuclear Research, established by the Brazilian Nuclear Energy Commission in June, 1997.

The situation surrounding the creation of Abadia de Goiás repository was exceptional because the radioactive waste to be dealt with was caused by an abnormal situation and did not arise from normal nuclear operations. For this type of eventuality, it is necessary to draw up specific legislation contemplating siting and other licensing procedures, including the share of responsibilities among the Union, the States and the Municipalities. These issues are addressed by the bill under discussion at the National Congress since the early 1980s.

### 3. THE ACCIDENT IN GOIANIA

Since September 1987, Brazil belongs to those countries which have a record in History of facts involving radioactive materials. In reality, the situation which Brazil faced in Goiânia was a radiological accident with consequences and repercussions comparable to those of a nuclear accident.

This is not the forum to discuss the circumstances of the accident. Nonetheless, it must be stated that those who were responsible for the radioactive source did not exercise proper control — their responsibility has been determined by a competent court.

Four persons died and some 250 were contaminated. These figures carried much weight when it came to deciding compensation for the victims under the special legislation issued by the State of Goiás and the Union in December 1996. To determine compensation for the victims, a link of causality had to be proven. This is also very important when considering causality for the victims of nuclear accidents which have been reported in several documents and scientific papers.

The sensationalism of the media (nationally and internationally) and the panic brought on by media reports gave rise to discriminatory attitudes and actions towards the inhabitants of the city of Goiânia and the products from the State of Goiás. These negative attitudes of the public towards the population of Goiás and the deceased victims were unexpected and unbelievable. Most of this conduct can be traced to a lack of information. Psychological concerns also played a key role, as reported by A. Carvalho at the Symposium sponsored by LAS/ANS, in June, 1997 in Rio de Janeiro.

#### 4. STATE LIABILITY

In Brazil, the principle of State liability was developed by the Tribunal before it was incorporated into the Federal Constitution of 1967. The provisions of the Constitution covering State liability embrace the principle of strict liability, i.e. liability due to risk.

For a nuclear or radiological incident, the Union is answerable for damage based upon these general provisions (FC Article 37, Paragraph 6) and not based on the particular provisions applied to nuclear activities (FC Article 21, XXIII). The State is responsible for public security and public health, areas in which the utilization of new and safe technologies is relevant.

The National Environment Policy Act (Law 6938/81 as amended by Law 7804/89) defines the strict liability regime for damages caused to the environment, following the principle of liability due to risk, where the acts of the agent are not relevant.

The obligation to compensate derives from the risk caused by certain activities. The utilization of radioisotopes for industrial, medical or scientific purposes is not covered by the provisions applicable to nuclear damage, but by the general provisions concerning State liability.

According to Paulo Affonso Leme Machado, “the possibility of nuclear damage, the situation of imminent damage is not a fantasy of a sick mind when we are talking about the installation or operation of nuclear power plant. The European Commission for Human Rights consider that “people who live in the surroundings of nuclear power plants can be affected by their normal operation and are worried about their health security” (free translation).

This understanding was shared by the Standing Committee on Nuclear Liability when it discussed and drafted the protocol for revision of the Convention of Third Party Liability for Nuclear Damage of 1963. Both the concept of nuclear incident and nuclear damage were enlarged so as to include preventive measures of imminent and grave threat of causing damage as well as economic loss and environmental damage. However, this could not be done for radiological damage.

#### 5. THE ROLE OF THE BRAZILIAN NUCLEAR ENERGY COMMISSION

In accordance with the provisions of the Brazilian Nuclear Policy Act (Law 4118/62 as amended by Law 6189/74 and Law 7781/89), the Brazilian Nuclear Energy Commission has the responsibility to control all the activities which utilize radioactive materials, particularly nuclear materials. For activities involving the use of radiation sources such as radioisotopes, the control exercised by CNEN covers radiation safety and commercial operations.

CNEN played an important role in the Goiânia events, particularly in the conduct of the operations following the accident, in monitoring the individuals of the population and later in overseeing all the procedures necessary for the treatment of the victims and other contaminated people.

#### 6. CONCLUSIONS

The radiological accident of Goiânia posed challenges to the professionals involved in the area, including the professionals of law.

Most of the legal solutions found were based upon existing legal principles and different branches of law, such as nuclear law, environmental law and criminal law.

The legal regime for radioactive waste is a relevant example of this. Meanwhile, a new branch of law is taking form, the law of sustainable development, which embraces economic development and environmental protection. This is the common path for environmental and nuclear law.

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