

THE IMPORTANCE OF A DOCUMENT MANAGEMENT POLICY TO RADIOACTIVE WASTE MANAGEMENT

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ABSTRACT

The absence of document management policies on the nuclear area, in Brazil, can affect the short- and the long-term safety of radioactive waste management. Knowledge about the radioactive content of the waste is essential to its safety. However, in the national legal framework, there is no specific rules about the maintenance of documents/information, neither procedures that are related to management of records that ensures their integrity, authenticity and preservation. Considering the nature and the magnitude of the dangers associate to radioactive waste, information related to all steps of its life cycle, from generation to final disposal, is essential to an appropriate management and disposal, in line with the principles of preserving the human health and the environmental, today and in the future. This paper intends to indicate all the main aspects of a document management policy that could impact on radioactive waste management, and to discuss how a national policy establishing guidance to all those involved in the generation and the management of the radioactive waste could help improve the processes of recording and preserving the required information to the future.

1. INTRODUCTION

Document archival work and radioactive waste management bear some similarities. Both are related to the treatment and preservation of human action outcomes, and both are held to ensure safety. In the case of the waste, perennial radiological safety; in the case of documents, preservation of information and its recovery if, and when needed.

In the case of documents, treatment, preservation and recovery are related to information that, in addition to fulfilling their primary function (inform/register/prove) for administrative, technical and legal purposes, may fulfill a secondary function, that is, to serve as historical, scientific and social elements. The archival work also aims to evaluate the record set to reduce its size whenever possible, so that only the necessary documents and information that have real value for the institutions and society are preserved. This procedure, known as appraisal, aims to eliminate documents that are devoid of primary and/or secondary value throughout their life, so that information maintenance and retrieval is as efficient and effective as possible.

Radioactive waste management aims to treat and preserve (isolate) materials resulting from human action when they are no longer needed, but still present concentration of radioactive substances above clearance levels. Due to their nature and the magnitude of the risks they pose, these materials require appropriate treatment to ensure their safety, that is the preservation of the human and the environmental health.

The management of these materials, their characteristics, the procedures applied on their entire life cycle, from generation to disposal in a final/definitive repository, generate a set of records that serve technical, administrative, regulatory and, inexorably, decision-making purposes by future generations. Thus, ensuring the preservation and accurate retrieval of these records is an assurance of opportunity for decisions based on the best information available.

An analogy between the two areas, document management and waste management is immediate in a meeting between professionals of both. Similarly, the possibility of using document management principles as a support for radioactive waste management is visible.

Despite these similarities and the connection between the two areas, including procedures and objectives, in the national legal framework, there are no regulations or guidelines that systematically trace this relationship. For example, when thinking about the management of radioactive waste, the management itself is necessarily an action that involves administrative processes, which are performed by recording information about the waste and its control. It is necessary to keep part of the records for long periods, considering the required isolation time of these radioactive waste. This aspect is not clearly and objectively dealt with in the regulations, which deal only with aspects related to recording.

Given this absence, this article aims to present some elements of document management as a possible tool for the safety in the management of radioactive waste, ensuring that the information produced during the process has its integrity, authenticity, preservation and, especially, guaranteed recovery. The message is that such elements should be integrated into public policy in the nuclear area.

This article was elaborated based on the analysis of documents from the National Archiving Policy (Law 8.159/1991) and the rules related to the management of radioactive waste in Brazil (CNEN-NN-8.01, CNEN-NN-8.02, CNEN-NN-6.09 and CNEN-NE-6.06).

2. ANALYSIS OF NATIONAL ARCHIVING POLICY

The National Archiving Policy in Brazil, instituted by Law 8,159 of January 8, 1991 [1], established archival rules for public documents, that is, those produced and received by public institutions of all spheres and powers in the performance of their duties.

In parallel, it also defined that private archives, that is, documents produced by individuals or legal entities not belonging to the state apparatus, can be declared as of public and social interest when the set of information is relevant to history and scientific development. In this case, the documents must be preserved and may be collected to public archival institutions to allow their consultation with the population.

This Law presents some important definitions for the understanding of Archival practice in Brazil. Two conceptualizations are important in the context of this study. The first is the definition of document management, as the “[...] set of procedures and technical operations related to its production, processing, use, appraisal and filing in the current and intermediate phase, aiming at its elimination or collection for permanent preservation.” [1].

It is noteworthy that as of the publication of this Law, and in addition to the Federal Constitution of 1988, document management and protection of archives are obligations of the Public Administration, with the objectives of “[...] support to administration, culture and to scientific development and as evidence and information” [1].

More broadly, document management “[...] involves concepts, standards, responsibilities and assignments, systems for execution, and the procedures themselves. These elements are interrelated to meet certain purposes related to better management, access, retrieval, disposal and preservation of archival documents, from the moment of their production or receipt” [2].

The definition of document management displayed in the Law presents the other important concept for this work: the ages applied to archival documents. Documents are classified as current, intermediate and permanent. Current documents are documents that are still pending or are already archived, but are frequently consulted. Intermediate are documents that are filed and are preserved for administrative, technical, legal purposes, i.e., they do not have a high frequency of consultation, but still officially serve the institution, either as a record of an activity or as compliance of legal requirements. The permanent ones are those archived for historical, probative and informative purposes, no longer having official function, but potentially social and scientific value [1].

These three ages are related to the follow document values: primary and secondary.

The primary value is that related to the official function of the document, that is, the value attributed to the document according to the interest a producer entity may have, taking into account its usefulness for administrative, legal and fiscal purposes [3].

The secondary value refers to the possible interest that the producing/receiving entity and other external users may have for a different reason than the one that led to the production of the documents. That is, this value is related to the ability of documents to prove and report for purposes other than the initial one, be it administrative, fiscal or legal [3].

Files and document sets of current and intermediate age are those with primary value. The set of documents with only secondary value is considered as permanent files. It is still possible to identify documents that may have primary and secondary value at the same time, serving as evidence for institutions and serving as information for researchers with a purpose other than those for which they were produced. However, this characterization is not provided for in Law 8.159/1991.

These concepts provided for in the National Archiving Policy are important for analyzing issues related to documents produced during radioactive waste management processes.

As a regulatory body for nuclear activity and responsible for the management of intermediate storages and final disposal facilities of radioactive waste in Brazil, as defined by Law 10.308/2001 [4], all documents produced and received by CNEN, including the results of these processes of production and management of radioactive waste would be subject to the National Archiving Policy. In this case, due consideration should also be given to documents that will be passed on by private institutions when the waste are transferred to the possession

of CNEN. Therefore, standardization of the form of production and processing of documents is important to ensure at least the completeness of the basic information required.

To understand how CNEN regulations address the management of documents produced or received in processes related to radioactive waste management, let us now analyze each one of them on time.

3. ANALYSIS OF RADIOACTIVE WASTE REGULATIONS

The management of low- and intermediate-level radioactive waste and the licensing of storage or disposal facilities are ruled in the Brazilian legal framework, respectively by the CNEN-NN-8.01 and CNEN-NN-8.02 regulations. These are the two main rule-making documents in the legal landscape of radioactive waste. Additionally, the CNEN-NN-6.09 defines the acceptance criteria for disposal of low- and intermediate-level radioactive waste and the CNEN-NE-6.06 which deals with the site selection process for disposal facilities. We review each document individually for the search of requirements on information, records, documents and document management procedures.

CNEN regulation NN-8.01, when dealing with the management of low- and intermediate-level radioactive waste, addresses, at times, aspects related to the documents and information produced during the management of the waste. In Chapter III, when the basic requirements for radioactive waste management are presented, the regulation indicates that there should always be a specific plan for such activity. This plan, among other issues, should include procedures that entail recording and maintenance of information about the waste and procedures. In Art. 10, it is indicated that every time waste is packaged, it is necessary to identify the packaging in accordance to the form presented in one of the annexes. This requirement brings document standardization to a procedure and is beneficial for document management [5]. Creating document standards for use, in addition to the technical benefit of predicting important information, enables information sharing between institutions, making it easier to read and retrieve information.

Also in Chapter III, the NN-8.01 defines that the waste that is cleared from regulatory control must be previously recorded in an inventory control spreadsheet. Several other planned procedures do not clearly set the requirement of registration of activities, but they are an elementary part of the procedures. This generates information, or rather documents, that need to be addressed, as they may be required for future review by the regulatory agency.

Another aspect that deserves analysis in the NN-8.01 regulation is the requirement that certain situations must have specific previous approval from CNEN. These approvals correspond to administrative procedures of the interested party with the regulatory body that result in one or more documents that must be kept by the requesting institution. Therefore, although there is no mention to the maintenance of these records, it is essential that the institution responsible for the waste carries them out.

Section X of Chapter III of CNEN-NN-8.01 deals with Records and Inventories, so it handles specifically with documents produced for radioactive waste management. It states that every facility must have an up-to-date radioactive waste record and that records must have at least a specific set of information. It defines that corrections and changes to the documents must be

justified and documented. Finally, it defines that the records and documents from their issuance/update/correction must be kept in the facility for assessment during regulatory inspection or to be supplied when requested, until the decommissioning of the facility.

At the end of the text, Annexes III and IV present models of inventory documentation and waste package identification forms, respectively. Templates have key fields for document management, such as those that identify the document producing entity, date of production, document signer, and a title that clearly identifies their function.

CNEN-NN-8.02 “establishes general criteria and basic requirements for the licensing of low- and intermediate-level radioactive waste storage facilities that applies for initial and intermediate storage and final disposal.” [6]. As this regulation establishes the licensing process, it sets the requirements and criteria to be met and the documented proof to be sent to CNEN and, thus, to obtain a favorable decision of the regulatory body regarding the commissioning of a radioactive waste storage or disposal facility.

Regarding information, records and, consequently, documents, some requirements deserve mention in this work. Some parts of the rule deal directly with records/documents. Therefore, file maintenance and organization are part of the related processes. We may cite, for example, the decommissioning of the storage that requires the applicant to submit a set of records about the waste/facility such as the description and history of the facility, the inventory of materials, the disposal of waste and the destination to be given to the documents produced there to be kept. In this respect, the regulation does not indicate which records are to be kept nor establishes their use, which would imply conservation planning, and organization, but only points out that decommissioning requires planning for this archival material.

In Annex II, when dealing with the Final Safety Analysis Report (RFAS), the base document for the issuance of CNEN's operating authorization, the CNEN defines as a requirement of the radiological protection program the maintenance of certain records, identifying them by the processes that produced them: “[...] reception and inspection of radioactive waste; waste stored for decay; cleared waste; transferred waste; sealed sources stored; solid waste; liquid waste; leak tightness control of sealed sources; radiological control of key workstations; waste package verification program; radiological control of Occupationally Exposed Individuals; calibration and verification of radiation protection equipment; inspection of components, equipment and systems important for safety; radiological protection inspections; access by individuals that are not part of the staff; non-conformities; incidents or accidents” [6].

Also in the quality management part of this same Annex, there are two items related to document management: the implementation of a management system for the licensing documentation and storage management; and the implementation of a system for the management of storage operational records. The regulation states that these systems should be “[...] consistent with the risks associated with the storage and with the complexity of the operations and activities that take place in it” [6]. In this case, it is pointed out the importance and necessity of document management as an element to support the operation of the storage facility, including relating its importance to the risk that the waste presents, but there are no details on which types of documents and nor on procedures that should receive more attention from the responsible institutions.

The same is true in Annex III when specifying the Final Safety Analysis Report (RFAS) requirements. In addressing the operating part of this report, the holder should point out what necessary procedures and documents will be contained in a permanent office prior to the institutional control phase of a disposal facility. That is, CNEN establishes that the FSAR must contain which documents will be transferred from the intermediate storage to the permanent office of the final repository. In this case, the regulator leaves it open to the institution responsible for the waste to define which documents will be held. That creates the risk that key decision-making documents could be deleted, while less important documents could be preserved permanently. This is frequently the case when procedures are performed by professionals unaware of archival aspects, usually resulting in a shallow and shortsighted analysis of the importance of document sets [7].

Less explicitly, the regulator also provides guidance that is related to document management. RFAS contains the need for detailed information on the operation of the facility, including the obligation to have a quality assurance system. This system has as one of its characteristics the definition of standards and processes of elaboration and approval of document models used in the procedures. However, the code lacks explicit definitions of documentation procedures, so that there is minimal standardization in the organization and maintenance of files resulting from the recordings of radioactive waste management.

This CNEN Standard NN 8.02 also defines the presentation of all necessary information to CNEN when any inspection or audit occurs. This indicates that the documentation must be available in a complete and timely manner. This is only possible with a prior and ongoing organization that ensures the preservation and immediate retrieval of documents.

Finally, in addressing the description of the storage or disposal facility and its safety-relevant components, equipment, systems and structures (item 4) in Annex II, there is no requirement about the information on where the files will be located and how will be organized. Given the criticality of accessing procedural and waste information, it is crucial that this is considered in cases where prompt response may be needed, such as in an emergency.

CNEN-NN-6.09, which deals with the acceptance criteria for disposal of low- and intermediate-level, is more objective and simple. It does not bring any procedure for the processing of information, but always requires an identification on the packaging as a way of creating an unambiguous and clear correspondence between it and the related documentation. At the end of the code, information that should be contained in these documents is identified [8].

CNEN-NE-6.06 deals only with general aspects related to documentation. As it deals with the process of selecting and choosing disposal sites, it involves the set of procedures that gathers the information for presentation to the regulatory body. Occasionally addresses the document "Site Report" being a consolidated set of information and other documents for submission to CNEN. In addition, the regulation states that many of the information produced during this process should be made available to the public surrounding the candidate site [9]. Making this information available requires an organization and prompt service when needed. This requires that the applicant of license produces the documents and makes them available. There is no other element in the code that addresses any aspect of document management.

These four regulatory documents issued by CNEN deal with radioactive waste management. Let's now look at how an archiving policy could improve the management of radioactive waste, based on the presented information.

4. ARCHIVING POLICY FOR RADIOACTIVE WASTE MANAGEMENT

To think of an archiving policy for the area of radioactive waste is to think systematically about all the processes that encompass the management of the waste.

First we need to define that a public policy is a set of acts that involves not only governments, but also other formal and informal actors seeking a benefit to society. In addition to legislative or regulatory action, it also depends on derived actions, such as implementation, execution and evaluation. Thus, public policy is substantiated by a legal framework, compliance with the laws and regulations by defined actors, and follow-up by a responsible body [10].

In this case, document management defined in the form of a code, and the exercise of its practices as procedures by the actors involved, form the basis of the Policy. The regulatory body, following the requirements of the processes that already exist, will perform the evaluation and monitoring.

Thus, taking the Law that defines the National Archiving Policy as an example, let's recap the definition of document management: “[...] procedures and technical operations related to its production, processing, use, appraisal and filing, in the current and intermediary phases, aiming at its withdrawal or collection for permanent custody” [1].

From this concept, we will analyze each aspect of its application and its technical procedures and operations and correlate them with radioactive waste management.

The document production phase concerns the creation of the documents, either its planning (as is the case of quality management in terms of document control), or in its preparation phase, during the work itself. An archiving policy in this sense defines how documents will initially be created: standards, formats, essential information, authentication marks, and authorized personnel to issue them; what procedures they must undergo when they are produced as a result of work, such as registration in a document management system, assignment of a unique control number to ensure its authenticity, since the production phase.

The procedure itself concerns the way this document moves from the point of origin to the point of destination. Every document is produced for a purpose, which involves recording and/or reporting. In the second case, it leaves a source to reach a destination, internal or external. This procedure should be controlled to prove that the document was not only created, but achieved its purpose. The procedures relate to the control of the proceedings.

The use of the document is a guarantee of its reading and interpretation by the interested party. This requires that the document be available when needed, both while are being processed or when are being archived. Therefore, it depends on the procedures previously indicated (having a registration number and having its movement controlled) and on being properly organized, by means of classification and ordering criteria.

Appraisal is an archival procedure that aims to analyze the document according to its primary and secondary value. Documents of primary value should be preserved in the interest of the institution itself, even if it has value as evidence to other institutions, such as the regulatory body. Documents with only secondary value should potentially arouse social, scientific, and historical interest beyond the initial value for which the document was produced. Therefore, to evaluate the documents is to select those that will be deleted because they no longer have primary and secondary values and indicate which ones will be preserved. From the point of view of this work, documentary evaluation will help to define the storage time of the various types of documents, ensuring the preservation of information for the necessary time and increasing the efficiency of all procedures applied to the collection of documents generated during the management of radioactive waste.

Finally, archiving is a physical and logical procedure that reflects the termination of the processing or immediate use of the produced document. Archiving starts the counting of the retention periods (usually, there may be different rules for defining the time) and usually, from this point, one addresses the place where the document will be stored. The storage site depends on an organization, based on a classification base in the way the documents were produced. For the management of radioactive waste, the availability of information about the waste is fundamental for the effective achievement of its safety objectives.

Both archiving and elimination are linked to the appraisal process. With regard to waste disposal, it is important that national regulations give a clearer picture of what information can be eliminated over time, including the retention periods applied, and what information should be preserved, if not indefinitely, at least for the periods of institutional control of the repository. In the analyzed regulations, this information is seldom expressed.

Systematic detailing, encompassing the phases and procedures listed above for all radioactive waste management processes, including standardized documents (such as those already identified throughout this work), safekeeping and disposal deadlines (final archiving or withdrawal), is the only assurance that the documents and the information will be available in a timely, complete and authentic manner for as long as necessary.

Therefore, a complete archival policy for the area of radioactive waste in the national scenario should include the definition of procedures, deadlines for critical document custody, responsibility for the storage and preservation of information and the flow of this information, from the moment it is made available, until their withdrawal or permanent preservation. Considering the Law on Access to Information in Brazil [11], it should also consider aspects of advertising and classification, always oriented towards transparency.

5. CONCLUSIONS

The CNEN regulations that address radioactive waste management, in particular NN-8.02, provide a set of definitions for document management, often referred to as “information”, “records”, “archives”, “documentation”. Building and implementing an archival policy for this area may have benefits for many of the processes that the CNEN codes govern.

In practice, it will positively affect radioactive waste management procedures by ensuring the integrity, rapid retrieval, preservation and authenticity of the documents and information generated from the time the waste is emplaced until the decommissioning of the repository.

The absence of an archiving policy for documents of the field of waste management can substantially threaten radioactive waste safety. By not clearly presenting all the important information that must be organized and preserved, given that certain wastes should be preserved for a long period, the risk of impairing decision-making processes about them is increased at various instances.

From this study, we believe that it is possible to improve the management of radioactive waste by a systematic analysis of each process – from licensing of waste generating facilities to the waste disposal in a final repository, including its closure and decommissioning – and the documents that are produced by the involved institutions and by the regulatory body. However, this is a broader study in progress, which will review the international experience and the literature of the areas of Document Management and Radioactive Waste Management and, finally, may present a proposal for the Brazilian nuclear future.

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