# Transport of Cobalt-60 for the Gammabeam 651 UNAM irradiator

MS Benjamín Leal Acevedo

Radiological Protection Officer Irradiation and Radiological Protection Unit

Instituto de Ciencias Nucleares UNAM



# National and Institutional Regulation



- Regulatory Law of Constitutional Article 27 on Nuclear Matters
- General Radiological Protection Regulation
- Regulation for the safe transport of radioactive material
- University Legislation



# Regulatory Law of Constitutional Article 27 on Nuclear Matters



### Article 19

**Safety is paramount** in every activity involving nuclear energy and must be incorporated into the **planning**, **design**, **construction and operation** stages all the way through to final closure and dismantling of nuclear and radioactive facilities, as well as in the final disposal of all their waste.

#### Article 21

**Radiological protection** aims to **protect** workers, the population and their assets, as well as the environment in general, by **preventing and limiting** the effects that can result from exposure to ionizing radiation.

## **General Radiological Protection Regulation**

#### Article 2

Entrusts the National Nuclear Safety and Safeguards Commission (CNSNS) with issuing technical standards, manuals and instructions required to develop and define how to comply with the provisions of the Regulation.

#### Article 100

Facilities that have irradiators installed or wherein sources are exposed out of their shielding during operation or with particle accelerators with energy equal to or greater than 10 MeV are considered Type I-A facilities; as well as mines and treatment plants involving radioactive materials.

#### Article 189.

Any activity involving sources of ionizing radiation is forbidden without the pertinent authorization, permit or license.



COMISION NACIONAL DE SEGURIDAD NUCLEAR Y SALVAGUARDIAS

Reglamento General de Seguridad Radiologica

## **General Radiological Protection Regulation**

Article 190.

To request an authorization for the purchase, import, export, the following information must be submitted Application in the official form.

- Articles of incorporation of the applicant company.
- Bond or surety from an institution or company that is legally authorized to guarantee damages to third parties caused by ionizing radiation.
- Activity and radioisotopes listed by product and physical and chemical form.
- Category of the packages and type of packaging used during transport.
- Training program on radiological protection for permit holders, for the use of ionizing radiation sources.



COMISION NACIONAL DE SEGURIDAD NUCLEAR Y SALVAGUARDIAS

Reglamento General de Seguridad Radiologica

## Regulation for the safe transport of radioactive material

The aim of the Regulation is to define rules concerning the safe transport of radioactive material by land or water, including reviewing the design, manufacture, testing and maintenance of containers, packages and packaging.

It reviews the documents, the dispatch, handling, storage in transit and reception at final destination of the packages.

Article 79 describes the requirements to obtain a Shipping Authorization, the interested party must submit to the Commission:

- I. Record of the Radiological Protection Officer being registered with the National Nuclear Safety and Safeguards Commission (CNSNS);
- II. Description of the Radioactive Content and type of Package for transport;
- III. Copy of the Design Certificate for the Special Form Radioactive Material and the Package

## Regulation for the safe transport of radioactive material

IV. Description of the Consignment's loading, transport, stowage, unloading and handling procedures;

V. Means of transport, type of Transport Unit and route planned;

VI. Security Plan

VII. Risk Assessment and Emergency Plan in the event of an accident during transport, containing at least the following:

a) Identification of the consequences of the accidents, with or without the release of Radioactive Material, the locations and routes involved

b) Emergency plan: must include the description of actions to be taken by the parties involved, their level of training, the ionizing radiation detection equipment, the manner in which the response group is activated and will guarantee the resources to implement the emergency plan.

VIII. Shipping country and recipient country, in the event of international transport (entry point into the Country)

IX. Liability Insurance, to guarantee the payment of potential damages or injuries caused by radiation sources to third parties, their property, or the environment.

## **University Legislation**

In Mexico, university studies started in 1551 with the Royal University of Mexico, which would become Royal and Pontifical until the end of the 19th century.

The National University of Mexico was established in 1910

On July 10, 1929, the Organic Law of the National Autonomous University of Mexico was signed.

# DIARIO OFICIAL

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#### SECRETARIA DE EDUCACION PUBLICA

LEY Orgánica de la Universidad Nacional Autónoma de México.

Al margen un sello con el Escudo Nacional, que dice: Estados Unidos Mexicanos.—Presidencia de la República.

MANUEL AVILA CAMACHO, Presidente Constitucional de los Estados Unidos Mexicanos, a sus habitantes, sabed:

Que el H. Congreso de la Unión, se ha servido dirigirme el siguiente

#### DECRETO:

"El Congreso de los Estados Unidos Mexicanos, detreta: LEY ORGANICA DE LA UNIVERSIDAD NACIONAL AUTONOMA DE MEXICO

ARTICULO 1º—La Universidad Nacional Autónoma de México es una corporación pública —organismo descentralizado del Estado— dotada de plena capacidad jurídica y que tiene por fines impartir educación superior para formar profesionistas, investigadores, profesores universitarios y técnicos útiles a la sociedad; organizar y realizar investigaciones, principalmente acerca de las condiciones y problemas nacionales, y extender con la mayor amplitud posible los beneficios de la cultura.

ARTICULO 2º-La Universidad Nacional Autónoma de México, tiene derecho para:

### Gammabeam651 pool-type panoramic irradiator Institute of Nuclear Sciences UNAM

UNAM Nuclear Laboratory was Founded on February 1st, 1967

In 1972 it was agreed that the Nuclear Laboratory would become the Center for Nuclear Research

In 1988 the Center for Nuclear Research became the present-day Institute of Nuclear Sciences



After the legal framework is understood and applied by all instances, the shipment with radioactive material occurs.

# Use of the T-STAR system designed by ORNL

- Pioneers in the use of a geolocation system.
- Satellite equipment that allows verifying the exact location of radioactive material in real time.
- Used in the 2019 shipment.







## Thank you for your attention



