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PROYECTO Official Mexican Standard PROY-NOM-014-NUCL-2017, Categories of packages, overpacks and cargo containers containing radioactive material: marking, labeling and labeling.

content

Introduction

During transport of radioactive material, the easiest and safest way of identifying at a glance the potential risk of exposure to ionizing radiation, which represents the contents of a package of radioactive material, is through the use of labels assigned to the package or packages to be transported, which provide symbolic and written information of the radioactive contents. In addition, and by regulatory requirements, identification marks are required to remain recognizable in the event of incidents occurring during transportation, including the effects of exposure to weather and abrasion, since such labels are of great assistance to response specialists to emergencies during transportation.

1. Purpose and scope

1.1 Objective

The present Draft Mexican Official Standard sets out the conditions for assigning the categories of packages, overpacks and cargo containers for radioactive material, as well as the marking, labeling and labeling requirements to be met for the transportation of radioactive material.

1.2 Field of application

The present Draft Official Mexican Standard is applicable to any package, overfill, tank and cargo container that is used to transport radioactive material within the national territory, including the storage in transit of them.

2. Definitions and abbreviations

For the purposes of this Draft Official Mexican Standard, the following terms and definitions apply:

2.1 BAE - I

Low Specific Activity - I

2.2 OCS - I

Objects Contaminated on the Surface - I

2.3 IT

Transportation Index

2.4 UN

Number of United Nations

2.5 ISC

Index of Security with respect to Criticity.

3. Categories

3.1 Packages, overpacks, tanks and cargo containers shall be classified in the following categories: I - White, II - Yellow or III - Yellow according to their IT and radiation level at the surface, in accordance with specified conditions and requirements in Table B.1 of Appendix B.

3.1.1 When the IT satisfies the condition corresponding to a category, but the radiation level on the surface satisfies the condition corresponding to a different category, the package, overpack or cargo container must be assigned the higher category of the two.

4. Marking, labeling and labeling

4.1 For each package or overpack, the United Nations (UN) number and the correct shipping name must be determined in accordance with Table B.2 of Appendix B.

4.2 In cases of international package transportation, the United Nations number, the name of the consignment, the categorization, the labels and the marks must be in accordance with the certificate of the country of origin of the design.

4.3 Marking

4.3.1 All packages must be legibly and durably marked on the outside of the packaging with the identification of the sender and consignee.

4.3.2 All overpacks must be marked legibly and durably on the outside of the envelope with the identification of the sender and consignee, unless the markings of all the packages included inside the envelope are clearly visible.

4.3.3 Each package must bear the United Nations mark legibly and durably abroad in accordance with Table B.3 of Appendix B.

4.3.4 All overpacks must be legibly and durably marked "OVERHEAD" and the UN mark as specified in Table B.3 of Appendix B, unless all markings of packages included in the overfill are clearly visible.

4.3.5 Every package whose gross mass exceeds 50 kg must be marked legibly and durably on the outside of the packaging.

4.3.6 Any package conforming to a Type A package design must be marked legibly and durably on the outside with the inscription "TYPE A".

4.3.7 Every package conforming to an approved design for Type B (U), B (M) and C packages shall be marked legibly and durably on the outside with:

(a) The identification mark assigned to that design by the competent authority of the country of origin of the design;

(b) a serial number identifying each package, and

c) The inscription "Type B (U)", "Type B (M)" or Type C.

4.3.8 Any package conforming to a Type B (U) or Type B (M) or Type C design shall bear on the outer surface the international ionizing radiation symbol shown in Figure A.1 of Appendix A , stamped, engraved or marked in any way that makes it visible and resistant to fire and water.

4.3.9 In the case of BAE-I or OCS-I materials contained in containers or packaging materials and transported under the exclusive use modality, the outer surface of these containers or packaging materials must bear the inscription "BAE-I RADIACTIVES "or" RADIOACTIVE OCS-I ", as appropriate.

4.4 Labeling

4.4.1 Every package, overpack, tank and cargo container must bear the labels conforming to the models of Figures: A.2, A.3 or A.4 of Appendix A, according to the category it belongs to. Labels that do not correspond to content should be removed or covered.

4.4.2 The labels shall be affixed to two opposite sides of the outer part of the package or overlap, or on the outside of the four sides of the cargo or tank container.

4.4.3 Each label must contain the following information:

4.4.3.1 Content:

a) For BAE - I materials, only the inscription "BAE - I" is required.

b) For materials other than BAE - I, the name of the radionuclide is required, followed by the BAE or OCS group as appropriate. For radionuclide mixtures, the most restrictive radionuclides should be listed as far as the label space permits.

4.4.3.2 Activity:

(a) The maximum activity of the radioactive contents during transport, expressed in bequereles (Bq) with the appropriate prefix and symbol of the SI.

(b) For fissile material, it may be used instead of the activity, its total mass given in grams or its multiples.

4.4.3.3 In the case of overpacks, tanks and cargo containers, in the inscriptions "CONTENT" and "ACTIVITY" of the label, shall contain the information required in 4.4.3.1 and 4.4.3.2 of this draft norm, respectively, totalized for the complete contents of the overfill, tank or cargo container. In the case of labels for overpacks or containers containing mixed packages of packages with different radionuclides, the inscription may be: "See transport documents".

4.4.3.4 Transport Index (IT): It is marked by the labels of categories II - Yellow and III - Yellow.

4.4.4 Labeling for safety with regard to criticality:

4.4.4.1 For each label conforming to the model indicated in Figure A.5 of Appendix A, the ISC declared on the certificate of approval that is applicable in the countries through or within which the consignment is transported and issued by the competent authority, or the ISC specified in the corresponding regulations.

4.4.4.2 In the case of overpacks and containers, on the label conforming to the model shown in Figure A.5 of Appendix A, the sum of the ISCs of all packages containing such overpacks and containers shall be entered.

4.5 Labeling

4.5.1 Tanks and cargo containers containing packages other than excepted packages shall bear four labels conforming to the model shown in Figure A.6 of Appendix A. The labels shall be affixed vertically to each of the walls lateral and front and rear of the cargo container or tank. All non-content labels must be removed.

4.5.2 Where the consignment in the cargo container or tank is unpacked BAE-I and OCS-I material or when a consignment of exclusive use in a cargo container is packaged radioactive material corresponding to a single United Nations number , must also bear the United Nations-assigned number set out in Table B.2 of Appendix B, corresponding to the consignment in black digits of size not less than 65 mm in height, either:

4.5.2.1 In the lower half of the label shown in Figure A.6 of Appendix A, on the white background, or

4.5.2.2 On the label shown in Figure A.7 of Appendix A.

When using the method indicated in 4.5.2.2 of this draft standard, the supplementary label shall be affixed immediately adjacent to the main label on all four sides of the cargo container or tank.

5. Surveillance

The Ministry of Energy, through the National Nuclear Safety and Safeguards Commission, is responsible for monitoring compliance with the provisions of this draft Official Mexican Standard, in accordance with its respective powers and under the provisions of the Regulatory Law of the Article 27 Constitutional in Nuclear Matter. Likewise, the corresponding sanctions will be applied under the terms of the applicable legislation.6. Procedimiento de evaluación de la conformidad

6.1 The evaluation of the conformity of the present Draft Mexican Official Standard will be carried out by the Energy Secretariat through the National Nuclear Safety and Safeguards Commission and / or by persons accredited and approved under the terms of the Federal Law on Metrology and Standardization and its Regulations.

6.2 The conformity assessment shall include the following:

6.2.1 Documentary revision of the classification of packages, overpacks, tanks and cargo containers according to their IT and radiation level, in category I - White, II - Yellow or III - Yellow.

6.2.2 Documentary and ocular review of the marking, labeling and labeling of packages, overpacks, tanks and cargo containers, which must comply with the requirements established in section 4 of this draft standard.

7. Accordance with international standards

This Draft Official Mexican Standard is not equivalent (NEQ) with any International Standard, as it does not exist at the time of its elaboration.

Apéndice A

(Normativo)

Figuras

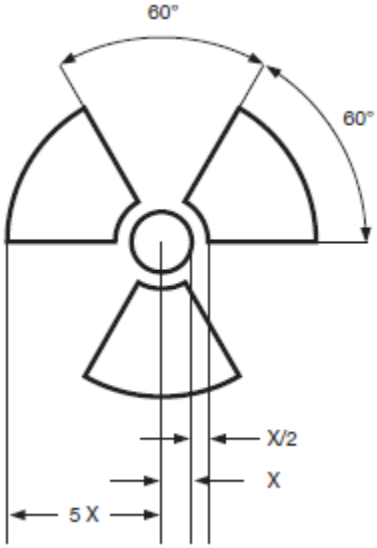

Figure A.1 Basic symbol: a clover whose proportions are based on a central circle of radius X. The minimum permissible dimension of X shall be 4 mm.

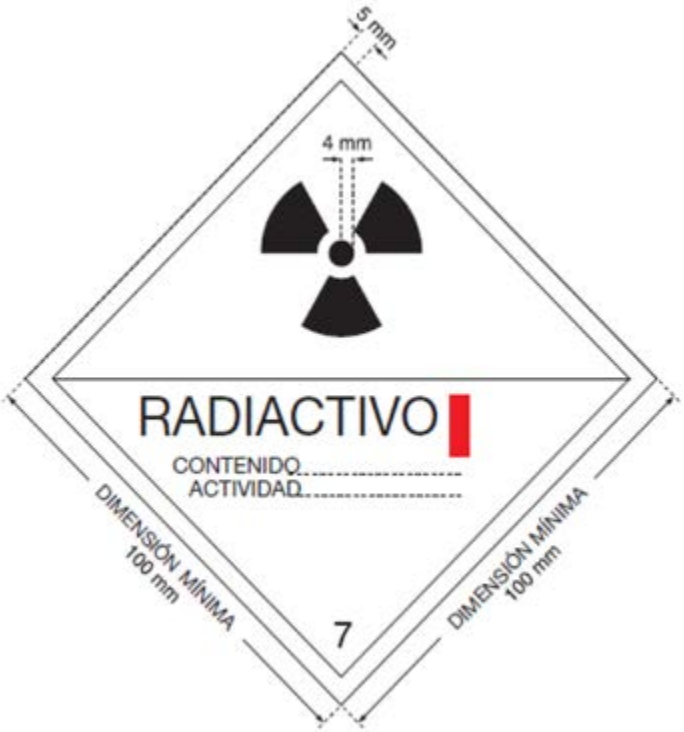

Figure A.2 Label for category I-BLANCA. The background color of the label will be white, the clover and the printed characters and lines will be black and the bar indicating the category will be red.

Figure A.3 Label for category II-YELLOW. The background color of the top half of the label shall be yellow and the bottom half white, clover and printed characters and lines shall be black and the bars indicating the Category shall be red.

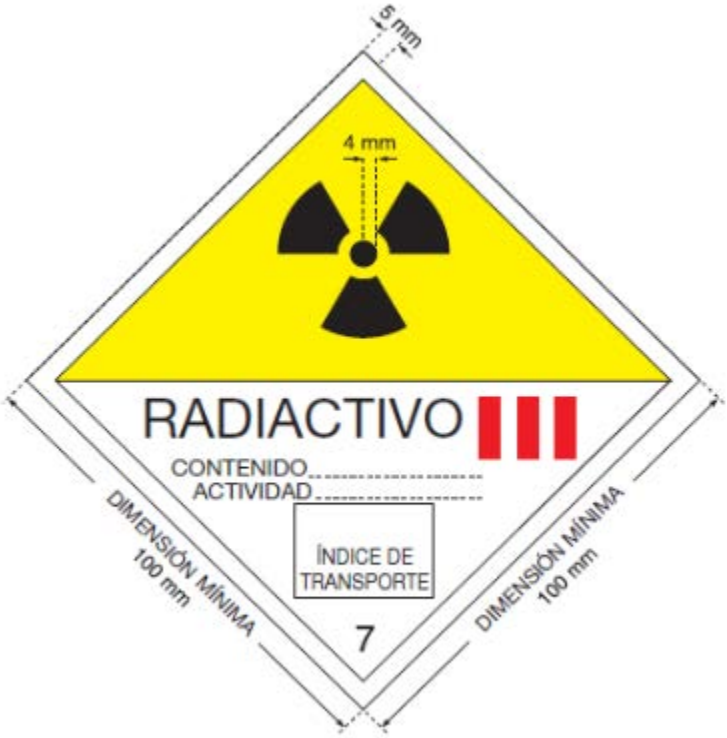

Figure A.4 Label for category III-YELLOW. The background color of the top half of the label will be yellow and the bottom half white, clover and printed characters and lines will be black and the bars indicating the category will be red.

Figure A.5 Label for the ISC. The background color of the label will be white and the characters and printed lines will be black.

Figure A.6 Labeling. The dimensions of this model are the minimum; when using labels of different dimensions, the same proportions will be stored as in the model. The number "7" will have a

height not less than 25 mm. The background color of the upper half of the label will be yellow and the lower half white, clover and printed characters and lines will be black. The use of the term "RADIACTIVE" in the lower half is optional, in order to also allow the use of this label to indicate the appropriate number of the United Nations corresponding to the consignment.

Figure A.7 Label to indicate separately the United Nations number. The background color of the label shall be orange and the edges and number of the United Nations shall be black. The symbol "****" indicates the space in which the appropriate UN number is to be inserted for the radioactive materials concerned, as specified in Table B.2 of Appendix B.

Apéndice B

(Normativo)

Tablas

Tabla B.1 - Categorías de los bultos, sobreenvases y contenedores

Condiciones		
Índice de Transporte (IT)	**Nivel de Radiación máximo en cualquier punto de la superficie externa del bulto. (mSv/h)**	**Categoría**
IT=0[a]	$Nivel\ de\ Radiación\ \leq 0.005$	I – BLANCA
0< IT< 1[a]	$0.005\ < Nivel\ de\ Radiación < 0.5$	II – AMARILLA
1< IT< 10	$0.5\ < Nivel\ de\ Radiación < 2$	III – AMARILLA
IT>10	$2\ < Nivel\ de\ Radiación < 10$	III – AMARILLA[b]

a Si el valor del Índice de Transporte es menor o igual que 0.05 entonces se puede tomar como cero, sólo para fines de redondeo.

b Deberá transportarse bajo uso exclusivo, salvo en el caso de los contenedores.

Tabla B.2 - Extracto de la lista de números de las Naciones Unidas, nombres correctos de expedición y descripciones

Asignación de los números de las UN	**Nombre correcto de expedición y descripción a**
Bultos exceptuados	
UN 2908	Materiales radiactivos. Bultos exceptuados, embalajes vacíos.
UN 2909	Materiales radiactivos. Bultos exceptuados, artículos manufacturados de uranio natural o uranioempobrecido o torio natural.
UN 2910	Materiales radiactivos. Bultos exceptuados, cantidades limitadas de materiales.
UN 2911	Materiales radiactivos Bultos exceptuados, instrumentos o artículos
UN 3507	Hexafluoruro de uranio. Materiales radiactivos. Bultos exceptuados, inferior a 0.1 kg por bulto, no fisionable o fisionableexceptuado.
Materiales radiactivos de baja actividad específica	
UN 2912	MATERIALES RADIACTIVOS, BAJA ACTIVIDAD ESPECÍFICA (BAE-I), no fisionables o fisionables exceptuados.
UN 3321	Materiales radiactivos, baja actividad específica (BAE - II), no fisionables o fisionables exceptuados. b
UN 3322	Materiales radiactivos, baja actividad específica (BAE - III), no fisionables o fisionables exceptuados. b
UN 3324	Materiales radiactivos, baja actividad específica (BAE - II), fisionables.
UN 3325	Materiales radiactivos, baja actividad específica (BAE - III), fisionables.

Objetos contaminados en la superficie	
UN 2913	MATERIALES RADIACTIVOS, OBJETOS CONTAMINADOS EN LA SUPERFICIE (OCS-I u OCS-II), no fisionables o fisionables exceptuados. b
UN 3326	MATERIALES RADIACTIVOS, OBJETOS CONTAMINADOS EN LA SUPERFICIE(OCS-I u OCS-II), FISIONABLES.
Bultos del Tipo A	
UN 2915	MATERIALES RADIACTIVOS, BULTOS DEL TIPO A, no en forma especial, no fisionables o fisionables exceptuados. b
UN 3327	MATERIALES RADIACTIVOS, BULTOS DEL TIPO A, FISIONABLES, no en formaespecial.
UN 3332	MATERIALES RADIACTIVOS, BULTOS DEL TIPO A, EN FORMA ESPECIAL, no fisionables o fisionables exceptuados b
UN 3333	MATERIALES RADIACTIVOS, BULTOS DEL TIPO A, EN FORMA ESPECIAL,FISIONABLES.
Bultos del Tipo B(U)	
UN 2916	MATERIALES RADIACTIVOS, BULTOS DEL TIPO B(U), no fisionables o fisionables exceptuados. b
UN 3328	MATERIALES RADIACTIVOS, BULTOS DEL TIPO B(U), FISIONABLES.
Bultos del Tipo B(M)	
UN 2917	MATERIALES RADIACTIVOS, BULTOS DEL TIPO B(M), no fisionables o fisionables exceptuados. b
UN 3329	MATERIALES RADIACTIVOS, BULTOS DEL TIPO B(M), FISIONABLES.
Bultos del Tipo C	
UN 3323	MATERIALES RADIACTIVOS, BULTOS DEL TIPO C, no fisionables o fisionables exceptuados. b
UN 3330	MATERIALES RADIACTIVOS, BULTOS DEL TIPO C, FISIONABLES.
Arreglos especiales	
UN 2919	MATERIALES RADIACTIVOS, TRANSPORTADOS EN VIRTUD DE ARREGLOS ESPECIALES, no fisionables o fisionables exceptuados. b
UN 3331	MATERIALES RADIACTIVOS, TRANSPORTADOS EN VIRTUD DE ARREGLOSESPECIALES, FISIONABLES.
Hexafluoruro de uranio	
UN 2977	MATERIALES RADIACTIVOS, HEXAFLUORURO DE URANIO, FISIONABLE.
UN 2978	MATERIALES RADIACTIVOS, HEXAFLUORURO DE URANIO, no fisionable o fisionable exceptuado. b

a El "NOMBRE CORRECTO DE EXPEDICIÓN" se encuentra en la columna "NOMBRE CORRECTO DE EXPEDICIÓN y descripción" y se limita a la parte que figura en LETRAS MAYÚSCULAS. En el caso de los números 2909, 2911, 2913 y 3326 de las Naciones Unidas, en que

distintos nombres correctos de expediciónestán separados por la palabra "o", únicamente se utilizará el nombre correcto de expedición pertinente.

b El término "fisionables exceptuados" se refiere sólo a las sustancias exceptuadas.

Tabla B.3 - Marcas de las Naciones Unidas para bultos y sobreenvases

Artículo	Marca de las Naciones Unidas a
Bulto (distinto de un bulto exceptuado).	Número de las Naciones Unidas, precedido de lasletras "UN", y nombre correcto de la expedición.
Bulto exceptuado (distinto de los presentes enremesas aceptadas para circulación y distribuciónpostal internacional).	Número de las Naciones Unidas, precedido de lasletras "UN".
Sobreenvase (distinto de los sobreenvases quecontengan sólo bultos exceptuados).	Número de las Naciones Unidas, precedido de lasletras "UN" para cada número de las Naciones Unidas pertinente en el sobreenvase, seguido del nombre correcto de la expedición en el caso de un bulto no exceptuado.
Sobreenvase que contenga sólo bultos exceptuados(distintos de las remesas aceptadas para circulación y distribución postal internacional).	Número de las Naciones Unidas, precedido de lasletras "UN" para cada número de las Naciones Unidas pertinente en el sobreenvase.
Remesa aceptada para circulación y distribuciónpostal internacional.	Número de las Naciones Unidas, precedido de lasletras "UN", y nombre correcto de la expedición.

8. Bibliografía

- Reglamento para el Transporte Seguro de Material Radiactivo, publicado en el Diario Oficial de la Federación el 10 de abril de 2017.
- Acuerdo por el que se da a conocer el Código Marítimo Internacional de Mercancías Peligrosas, (Código IMDG), publicado en el Diario Oficial de la Federación el 20 de mayo de 2016.
- NOM-002-SCT-2011, Listado de las substancias y materiales peligrosos más usualmente transportados.
- NOM-004-SCT-2008, Sistemas de identificación de unidades destinadas al transporte de substancias, materiales y residuos peligrosos.
- Organismo Internacional de Energía Atómica. "Reglamento para el Transporte Seguro de Materiales Radiactivos". Edición de 2012. Colección de Normas de Seguridad del OIEA No. SSR - 6, OIEA, Viena (2013).
- Organismo Internacional de Energía Atómica. "Material Explicativo para la Aplicación del Reglamento del OIEA para el Transporte Seguro de Materiales Radiactivos (Edición de 2012)". Colección de Normas de Seguridad del OIEA No. SSG-26, OIEA, Viena (2016).
- United Nations. Recommendations on the transport of dangerous goods, seventeenth revised edition, New York and Geneva, 2011.

TRANSITORY

Only. The present draft Official Mexican Standard once published in the Official Gazette of the Federation as a definitive rule will come into force 60 calendar days from the immediate natural day following the day of its publication.

Mexico City, May 25, 2017.- The Director General of the National Commission on Nuclear Safety and Safeguards and Chairman of the National Advisory Committee on Standardization of Nuclear Safety and Safeguards, Juan Eibenschutz Hartman.- Heading.