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TITLE: PRM-030-022 - - BROOKES AND GATEHOUSE, INC -
TRITIUM-ACTIVATED LIGHT SOURCES IN ELECTRICAL
METERS FOR MARINE PURPOSES

CASE REFERENCE:

PRM-030-022

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ATOMIC ENERGY COMMISSION

(10 CFR PART 30)

RULES OF GENERAL APPLICABILITY TO LICENSING OF BYPRODUCT MATERIAL

Proposed Exemption of Tritium Contained in Marine Navigational Instruments

By letter dated March 3, 1966, Brookes and Gatehouse, Inc., filed a petition with the Atomic Energy Commission requesting exemption from licensing requirements for electrical meters containing tritium-activated light sources used for marine purposes. The light sources described by the petitioner are small glass capsules, internally coated with a phosphor which is activated by tritium gas in the capsule. Such instruments are used for the measurement of boat speed, depth of water, wind direction, etc. The instruments described by the petitioner are electrically operated and capable of being electrically illuminated. However, the electric power is sometimes supplied by batteries so that it is desirable to avoid even the small power consumption of a low wattage lamp. Much marine instrumentation has been transistorized for this and other reasons.

The Commission has given careful consideration to the petition and is considering a finding that exemption from licensing requirements for the receipt, possession, use, transfer, export, ownership, and acquisition of tritium-luminous marine navigational instruments, under the conditions set out in the proposed amendments, will not constitute an unreasonable risk to the common defense and security and to the health and safety of the public.

The proposed amendment to 10 CFR Part 30 which follows would exempt such instruments by revising §30.15(a)(5). The exemption for marine compasses containing not more than 750 millicuries of tritium, presently provided in §30.15(a)(5), would be extended to exempt other marine navigational instruments containing not more than 250 millicuries of tritium gas. In addition, the proposed amendment would require the tritium content of the presently exempted marine compasses to be in the physical form of gas.

The present exemption in §30.15(a) does not apply to the manufacture or import for sale or distribution of the products listed. Criteria for the issuance of a specific license to manufacture or import exempted items, and certain reporting and quality control requirements, are set forth in §§32.14, 32.15, 32.16 and 32.110, 10 CFR Part 32, "Specific Licenses to Manufacture, Distribute, or Import Exempted and Generally Licensed Items Containing Byproduct Material," and would apply to manufacture or import of marine navigational instruments under the proposed exemption.

The Commission has determined that marine navigational instruments are items intended for use by the general public. Accordingly, pursuant to §150.15(a)(6), 10 CFR Part 150, "Exemptions and Continued Regulatory Authority in Agreement States Under Section 274", the transfer of their possession or control by the manufacturer, processor, or producer, is subject to the Commission's licensing and regulatory requirements even if the product is manufactured pursuant to an agreement State^{1/} license. A manufacturer,

^{1/} A State to which the Commission has transferred certain regulatory authority over radioactive material by formal agreement, pursuant to Section 274 of the Atomic Energy Act of 1954, as amended.

processor, or producer of marine navigational instruments containing tritium, when located in an agreement State, would be required to file an application with the Commission for a specific license authorizing the transfer of such instruments. The application should meet the criteria of §32.14(b), (c) and (d), 10 CFR Part 32.

There does not appear to be any significant hazard associated with the possession and use of tritium-luminous marine navigational instruments. Since tritium emits only a very low energy beta particle which is completely shielded by the walls of the glass capsule in which the gas is sealed, there is no external radiation hazard. So long as the tritium gas is confined in the glass capsule, it is not available for uptake into the body. However, in the event of severe damage to the instrument, the capsule might be ruptured and the tritium gas dispersed in the air. The types of instruments under consideration are usually installed in the wheelhouse or cockpit of a ship or boat, which, if not completely open to the air, is subject to considerable ventilation. The rapid dilution of the tritium gas by air, and the fact that data indicate that less than 0.1% of the tritium gas inhaled into the lungs is retained in the body, assure that the radiation exposure which might be received as a result of damage to a tritium-luminous instrument would be very small. For example, if by some accident 250 millicuries of tritium gas, the maximum instrument content being considered, were released into a volume of 10 cubic meters, with a ventilation rate of only 10 air changes per hour, the total internal radiation dose received by a person occupying such a space would not exceed 2 millirem, or 2% of the annual exposure received from natural background.

The types of instruments under consideration have relatively long useful lives, perhaps as long as 20 years. Much of the tritium would decay during the life of the instrument or within the instrument after its disposal as trash. Even if broken or obsolete instruments were to be processed to reclaim metallic components, contamination of scrap and reprocessed metal is not a significant consideration. While a very small fraction of any tritium gas released might be adsorbed on metallic surfaces, it would be driven off during smelting or other purification processes. The petitioner has estimated that the annual market for his instruments in the United States is not likely to exceed 1,000. If a factor of 100 is assumed to account for other manufacturers, and if each instrument is assumed to contain the proposed maximum amount of tritium, 250 millicuries, the total amount of tritium used annually could approach 25,000 curies. This quantity may be compared to the natural production of approximately 8 million curies per year of tritium in the atmosphere by cosmic radiation. It has been calculated that naturally produced tritium delivers an environmental exposure of approximately .003 millirem per year.

An exemption for marine navigational instruments containing tritium would be consistent with the consumer product criteria published in the FEDERAL REGISTER on March 16, 1965 (30 F.R. 3462), which set out the essential terms of the Commission's policy with respect to the approval of the use of byproduct and source material in products intended for use by the general public without the imposition of regulatory controls on the user.

Pursuant to the Atomic Energy Act of 1954, as amended, and the Administrative Procedure Act of 1946, notice is hereby given that adoption of the following amendment to 10 CFR Part 30 is contemplated. All interested persons who desire to submit written comments or suggestions for consideration in connection with the proposed amendments should send them to the Secretary, United States Atomic Energy Commission, Washington, D. C., 20545, within 60 days after publication of this notice in the FEDERAL REGISTER. Comments received after that period will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments filed within the period specified.

1. Subparagraph (5) of §30.15(a) is amended to read as follows:

§30.15 Certain items containing tritium or promethium 147.

(a) Except for persons who apply tritium or promethium 147 to, or persons who incorporate tritium or promethium 147 into, the following products, or persons who import for sale or distribution the following products containing tritium or promethium 147, any person is exempt from the requirements for a license set forth in section 81 of the Act and from the regulations in Parts 20 and 30-36 of this chapter to the extent that such person receives, possesses, uses, transfers, exports, owns, or acquires the following products:

* * * * *


(5) Marine compasses containing not more than 750 millicuries of tritium gas and other marine navigational instruments containing not more than 250 millicuries of tritium gas.

* * * * *

AUTHORITY: Sec. 81, 68 Stat. 935; 42 U. S. C. 2111; sec. 161, 68 Stat. 948;
42 U. S. C. 2201.

Dated at Germantown, Maryland this 2nd day of September, 1966.

FOR THE ATOMIC ENERGY COMMISSION


W. B. McCool
Secretary

United States
ATOMIC ENERGY COMMISSION
Washington, D. C. 20545

DOCKET NUMBER
PETITION RULE PRM 30-22

PRM 30-22

SEP 7 1966

Honorable Chet Holifield, Chairman
Joint Committee on Atomic Energy
Congress of the United States



Dear Mr. Holifield:

Enclosed for the information of the Joint Committee is a copy of a Notice of Proposed Rule Making to amend the Commission's regulation "Rules of General Applicability to Licensing of Byproduct Material", 10 CFR Part 30. The Notice has been transmitted to the Office of the Federal Register and will allow 60 days for public comment after publication in the FEDERAL REGISTER.

The proposed amendment would exempt from licensing requirements the possession and use of tritium gas contained in marine navigational instruments.

The Commission is considering a finding that under the conditions of the proposed amendment, the exemption will not constitute an unreasonable risk to the common defense and security and to the health and safety of the public.

Attached also is a copy of a public announcement to be released by the Commission in the next few days on this matter.

Sincerely yours,

Harold L. Price
Director of Regulation

Enclosures:

1. Notice of Proposed Rule Making
2. Public Announcement

**AEC PROPOSES TO EXEMPT FROM LICENSING
THE USE OF TRITIUM IN NAVIGATIONAL INSTRUMENTS**

The Atomic Energy Commission is proposing to exempt from licensing the possession and use of tritium to provide illumination in marine navigational instruments.

The Commission recently approved a similar use of tritium in marine compasses. Under the proposed exemption, no instrument would contain more than 250 millicuries of tritium gas.

The manufacture or import of the instruments for sale and distribution would still require a specific license from the Commission.

The proposed action results from a petition from Brookes and Gatehouse, Inc., of Larchmont, New York. The instruments described by the petition would be installed in marine craft as part of electronics systems for measuring boat speed, water depth and wind direction. To provide illumination, small glass capsules filled with tritium gas would be secured to the dials and pointers of the instruments.

Notice of the proposed amendment to Part 30 will be published in the FEDERAL REGISTER on _____, allowing 60 days for public comment. Interested persons may submit written comments or suggestions to the Secretary, U. S. Atomic Energy Commission, Washington, D. C., 20545.

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The Commission has given careful consideration to the petition and is considering a finding that exemption from licensing requirements for the receipt, possession, use, transfer, export, ownership, and acquisition of tritium-luminous marine navigational instruments, under the conditions set out in the proposed amendments, will not constitute an unreasonable risk to the common defense and security and to the health and safety of the public.

The proposed amendment to 10 CFR Part 30 which follows would exempt such instruments by revising §30.15(a)(5). The exemption for marine compasses containing not more than 750 millicuries of tritium, presently provided in §30.15(a)(5), would be extended to exempt other marine navigational instruments containing not more than 250 millicuries of tritium gas. In addition, the proposed amendment would require the tritium content of the presently exempted marine compasses to be in the physical form of gas.

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processor, or producer of marine navigational instruments containing tritium, when located in an agreement State, would be required to file an application with the Commission for a specific license authorizing the transfer of such instruments. The application should meet the criteria of §32.14(b), (c) and (d), 10 CFR Part 32.

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* * * * *

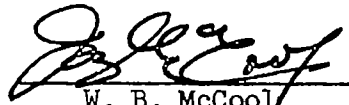
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* * * * *

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Dated at Germantown, Maryland this 2nd day of September, 1966.

FOR THE ATOMIC ENERGY COMMISSION


W. B. McCool
Secretary



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
WASHINGTON, D.C. 20201

SECRET NUMBER
PROPOSED RULE **PR 30-**
*Tritium Contained
in Navig. Inst.*

BUREAU OF STATE SERVICES

REFER TO: DRH:SAB

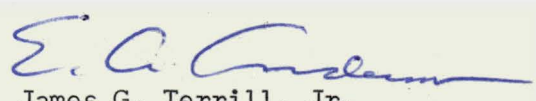
OCT 12 1966

Mr. Woodford B. McCool
Secretary
U. S. Atomic Energy Commission
1717 H Street, N.W.
Washington, D.C. 20545

Dear Mr. McCool:

The staff of the Division of Radiological Health has reviewed the proposed amendment to the Atomic Energy Commission regulation 10 CFR Part 30 as published in the Federal Register on Wednesday, September 14, 1966. Staff members have discussed the proposed exemption with Mr. Walter S. Cool of the Division of Safety Standards. On the basis of this review we believe that the proposed exemption to 10 CFR 30 for tritium contained in marine navigational instruments, if granted, would not result in an unacceptable radiation exposure to the public.

Sincerely yours,

for 
James G. Terrill, Jr.
Deputy Chief
Division of Radiological Health

