[7590-01]

NUCLEAR REGULATORY COMMISSION

[Docket No. PRM-34-1]

TECH/OPS

Denial of Petition for Rulemaking with Regard to the Surface Radiation Level Limit for Radiographic Exposure Devices

Notice is hereby given that a petition for rulemaking, submitted to the Nuclear Regulatory Commission by letter dated April 15, 1977, by Tech/Ops, Radiation Products Division, 40 South Avenue, Burlington, Massachusetts, has been denied. The petition requested the NRC to amend its regulations in 10 CFR Part 34, "Licenses for Radiography and Radiation Safety Requirements for Radiographic Operations." This petition is being denied by the Executive Director for Operations in accordance with 10 CFR 1.40(o).

The petitioner requested the NRC to revise 10 CFR 34.21, "Limits on levels of radiation for radiographic exposure devices and storage containers," to read as follows:

> With the sealed source in the shielded or "off" position, radiographic exposure devices and storage containers for sealed sources shall have no radiation level in excess of 100 milliroentgens per hour at five centimeters from any exterior surface of the device and 10 milliroentgens per hour at one meter from any exterior surface of the device. Compliance with the exposure limits shall be determined by measurements averaged over a cross sectional area of ten square centimeters with no linear dimension greater than five centimeters.

A notice of filing of petition, Docket No. PRM-34-1, was published in the FEDERAL REGISTER on May 19, 1977 (42 FR 25787). The comment period expired July 18, 1977. No public comments were received on this petition although 6 comments were received on a similar petition (PRM-20-9) to amend Part 20.

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The petitioner said that it is not possible to measure radiation exposure levels exactly on the surface of a radiographic exposure device using a detector of finite size. It is also not possible to measure the radiation exposure level at each and every point on the surface with a finite size detector because the detector must necessarily average the radiation exposure over the volume of the detector. The petitioner stated that a measurement at 5 centimeters from the surface and averaged over a cross-sectional area of 10 centimeters is possible to make with commonly available instruments.

The petitioner has stated that the present regulation results in inconsistent measurements between people using different size detectors. At times these inconsistencies have resulted in disagreements over whether a radiographic exposure device met the requirements of §34.21.

The petitioner also filed a petition for rulemaking (PRM-20-9) for a similar change in §20.205(c)(2), which deals with allowable radiation levels for packages to be transported. This petition was denied on April 13, 1979 (44 Federal Register 22232).

The staff has considered the advantages and disadvantages in changing the radiation exposure level limit in §34.21 from 200 milliroentgens per hour at the surface to 100 milliroentgens per hour at a distance of 5 centimeters from the surface of radiographic exposure devices. It has been concluded that such a change would not be advisable based on the following considerations:

(1) Making the suggested change in Part 34 while not making the corresponding change in Part 20 would mean that radiographic exposure devices shipped without an overpack would have to meet two different requirements for

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Enclosure "B"

limits on radiation levels. Changing only Part 34 would not solve the petitioner's problem because the devices would still sometimes be covered by Part 20 while being transported. In addition, added complexity and confusion would result from having two different sets of requirements.

(2) The proposed change would require licensees to use specific types of radiation detection instruments with small diameters and limited sensitive volumes; e.g., it would eliminate the use of ionization-chamber instruments for surface radiation level measurements. Many licensees would have to purchase replacements for their present monitoring instruments. In addition, it would require monitoring personnel to keep the center of the sensitive volume of the detector at 5 centimeters from the surface. The current practice is to place an instrument detector touching the surface of the device and pass the detector over the device surfaces to assure the level on each surface is within the limit. This present method is simple, easily understood, and allows the use of any type radiation detector.

(3) The suggested change to NRC's regulations would make NRC regulations inconsistent with Department of Transportation regulations. This would cause a hardship on NRC licensees with little resulting benefit.

(4) A change in the regulations would require people to learn and use a new measurement technique which is not as simple as the existing technique and offers no real improvement in health or safety.

However, the staff recognizes the potential difficulty certain licensees may have in interpreting the regulation in 10 CFR 34.21 as to whether a precise determination of surface radiation level is required.

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In a letter to the petitioner dated December 5, 1977, the staff stated, "As with any regulation, the (safety) limits must be given as exact, precise values. The methods of demonstrating compliance with these limits are usually left to the regulated person. Any method which provides a reasonable demonstration of compliance will be accepted. In most cases exact measured values are not required."

The staff indicated that precise measurements exactly on the surface of the packages are not necessary nor required under 10 CFR 34.21. Measurements at some distance from the surface are acceptable if it can be shown from the measured value that the radiation level on the surface is likely to meet the regulatory limit.

The petitioner also suggested that the radiation levels be determined by measurements averaged over a cross-sectional area of 10 square centimeters with no linear dimension greater than 5 centimeters. The staff believes that the averaging of radiation levels over the cross-sectional area of a probe of reasonable size is acceptable for demonstrating compliance with the requirements specified in 10 CFR 34.21. A probe of reasonable size is one for which (1) the sensitive volume of the probe is small compared to the volume of the package to be measured and (2) the largest linear dimension of the sensitive volume of the probe is no greater than the smallest dimension of the device.

The staff recognizes that this interim guidance will not completely solve the petitioner's problem. The problem will be dealt with in more detail and in a more appropriate manner and time when design criteria for radiographic exposure devices are considered. An advance notice of proposed rulemaking on

design criteria was published for public comment on March 27, 1978 (43 Federal Register 12718). Publication of the final design criteria for comment is planned for 1980. The design criteria will include how measurements should be made to assure compliance with Parts 20 and 34 of NRC regulations.

In view of the foregoing, the NRC hereby denies the petition for rulemaking filed by Tech/Ops on April 15, 1977. Copies of the petition for rulemaking and the NRC's letter of denial are available for public inspection in the NRC's Public Document Room at 1717 H Street NW., Washington, D.C.

Dated at Bethesda, Md. this 9th day of July, 1979.

For the Nuclear Regulatory Commission.

Lee V. Gossick
Executive Director for Operations

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Draft Congressional Letter

Dear Senator _____:

Enclosed for the information of the Subcommittee is a copy of a Notice of Denial of Petition for Rulemaking to be published in the Federal Register. By letter dated May 11, 1977, the Subcommittee was provided with copies of PRM-34-1 filed by Tech/Ops, Radiation Products Division, to amend the Commission's regulation, 10 CFR Part 34, "Licenses for Radiography and Radiation Safety Requirements for Radiographic Operations."

The petitioner requested the NRC to change the way of measuring surface radiation levels from industrial radiographic exposure devices because of the practical difficulty of measuring radiation exposure levels at the surface as specified in current regulations.

After careful consideration of the petition the NRC staff has concluded that the adoption of the petition would lead to difficulties for licensees without a corresponding benefit of improved public health and safety. For this reason, explained more fully in the Federal Register Notice, the NRC has denied the petition for rulemaking. A related petition (PRM-20-9) to amend Part 20 of NRC's regulations was previously denied on April 13, 1979 (44 Federal Register 22232).

Enclosed also is a copy of a letter notifying the petitioner of the denial of his petition for rulemaking.

Sincerely,

Robert B. Minogue, Director
Office of Standards Development

Enclosures:
1. Federal Register Notice
2. Letter to Tech/Ops

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Enclosure "C"