

UNITED STATES GOVERNMENT

# Memorandum

DATE: June 14, 1965

TO : Files

FROM : B. W. Churchill, Isotopes Branch  
Division of Materials Licensing *W*

SUBJECT: TELEPHONE CALL TO JAY MENEFEE, HARSHAW CHEMICAL COMPANY, CLEVELAND, OHIO,  
MAY 5, 1965

Harshaw's application dated March 19, 1965, included a request to distribute Americium 241 calibration sources to persons (1) specifically licensed, (2) generally licensed under 30.21(a), 10 CFR 30, and (3) generally licensed under 30.21(e). I explained that 30.21(a) did not include provisions for Americium 241 and that 30.21(e) appeared to be more applicable to plated disc sources than to sources consisting of Americium 241 bound in a scintillation crystal lattice. The purpose of the discussion was to obtain information to determine if the crystal sources could qualify for general license distribution under 30.21(e).

The crystal sources could not be subjected to the prototype tests of 30.24(n), 10 CFR 30, because (1) the active surface cannot be wiped without melting the crystal and (2) the crystal cannot be soaked in water. However, each crystal is hermetically sealed, either in a metallic crystal housing or in a phototube assembly, to prevent damage from the moisture content of the atmosphere. Mr. Menefee said he would submit a proposal for prototype testing and quality control of the sealed crystals. This would effectively constitute a request for exemption from the test requirements of 30.24(n) as there would then be no radioactive surface to wipe and he wouldn't want to soak even the sealed unit (crystals range in price from \$100 to \$30,000). Mr. Menefee said Americium 241 content would normally range from 0.001 to 0.5 microcurie, but not greater than 5 microcuries.

Mr. Menefee said the purpose of the Americium 241 "subcrystal" was to provide gain calibration and stabilization for the scintillation system. He felt that this would qualify the sources under 30.21(e)(3)(v) in that stabilization could be thought of as continuous calibration.

Mr. Menefee stated that all such crystals would be of one of the four types described in the submitted drawings. This includes one line assembly in which the crystal and photomultiplier tube are sealed into one unit and three designs in which the crystals are independently sealed. These latter can be changed from one tube to the other by the user, and will be provided with a storage container when not in use. The crystals are sensitive to mechanical and thermal shock with the largest and most expensive being the most sensitive. Damaged crystals are returned to Harshaw as the expensive



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crystalline material can be recovered. He said standard model numbers would be a problem in view of the large number of custom designs for the detector systems and that each crystal had a different number. He suggested that each model number include a numeral to indicate each of the four designs submitted as there was no difference with respect to containment, testing, or quality control.

With respect to labeling, Mr. Menefee stated that there was ample room on the line assembly (crystal incorporated in PM tube) and that the other crystals, too small for labeling, would be stored in a labeled container.

The feasibility of a petition for exemption of the crystal sources was not discussed.