

UNITED STATES GOVERNMENT

# Memorandum

TO : Files

DATE: OCT 5 1965

FROM : Bruce W. Churchill, Isotopes Branch  
Division of Materials Licensing *b7c*

SUBJECT: TELEPHONE CALL TO MR. J. MENELEE, THE HARSHAW CHEMICAL COMPANY, CLEVELAND,  
OHIO, OCTOBER 4, 1965

Harshaw's reply of September 23, 1965, to our letter of June 28 included some alternative prototype tests for the crystals containing Americium 241 or plutonium. The tests included soaking the sealed crystal in oil. Mr. Menefee said that the oil soak test was an attempt to simulate the Section 32.102, 10 CFR 32, requirements for a water soak test and Harshaw was not particularly anxious to soak the crystals in oil. Mr. Menefee explained that the normal procedure was to conduct performance tests and that a leak in the sealed crystal containment (can) would show up in a matter of hours due to deterioration of the hygroscopic crystal. Two or three days normally elapse between the time the can is sealed and the final performance check is performed. In view of the nature of the crystal assembly and the effectiveness of the performance tests, I told Mr. Menefee that it would not be necessary for him to conduct the oil soak tests.

The can is normally aluminum, sometimes stainless steel or copper, and the seal is epoxy or, if rugged use or extreme temperatures are anticipated, the can may be tin soldered. The epoxy is good for a temperature range of from 0 to 100°C. An extremely thin epoxy layer is spread between the crystal and the window to provide an optical coupling. If the temperature range is exceeded, this optical coupling would break down and noticeably detract from performance before the seal would fail.

Mr. Menefee said that nearly all crystals would contain from 0.001 to 0.01 microcurie of americium or plutonium although occasionally they might contain almost 1 microcurie.

Labeling will depend on the size of the unit. About 95% of the units will contain the caution symbol, the isotope, date of measurement, and the amount; and about 90% will have room for the label required in Section 32.58, 10 CFR 32. If there is no room on the unit for these labels, they will be affixed to the storage container. The manufacturer recommends to customers that the devices be kept in the storage container when not in use; the containers have been specially constructed to guard against both thermal and mechanical shock.

The model number, which includes the letters AM or PU, is permanently engraved on each unit. This is primarily for Harshaw's own benefit to assure that radioactive crystals returned to the factory are properly identified.

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