

UNION CARBIDE CORPORATION

MEDICAL PRODUCTS DIVISION

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JULY 11 NUMBER
PROPOSED RULE PP-70,73(43FR 35321)

September 26, 1979



Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Re: Impact of Upgrade Rule

If this facility were to become subject to the proposed Upgrade Rule, for example by removing the exemption for "self-protected" irradiated fuel, the impact on the delivery of health care to the citizens of the United States would be adverse and serious. This impact, at worst, would be an interruption in the commercial supply of the radioisotope most widely-used in diagnostic nuclear medicine, or at best an eventual dependence on foreign sources for its supply. This follows from the high monetary cost of complying with Upgrade.

This research reactor facility, the Union Carbide Nuclear Reactor (License R-81) located near Tuxedo, New York, produces radioisotopes for use in diagnostic and therapeutic nuclear medicine. It is the only domestic commercial producer of radioiodine-131 and of the most widely-used diagnostic isotope in nuclear medicine, fission-product molybdenum-99/technetium-99m. At least 10 million diagnostic procedures, mainly related to detection of cancer, are performed each year in the United States using the latter short-lived radioisotope. Interruption of its supply would have a serious effect on medical care.

Fission-product radioisotopes are produced from high-enriched uranium (HEU) targets by irradiating these in the reactor and then processing them in the associated hot cells. The reactor itself also uses HEU in its fuel elements. Under the current criteria, this facility, comprising the reactor and processing cells, is exempt from the proposed Rule by virtue of the high radiation level that is maintained in irradiated products and fuel. Unirradiated HEU is strictly limited to 5 kilograms. An upward change in the radiation level required for fuel to qualify as "self-protected" could, however, expose the facility to the stringent safeguards of the Rule.

While it is possible that the reactor fuel elements may eventually be replaced by low-enriched fuel elements (LEU), this requires successful conclusion of a development program underway at Argonne National Laboratory, which is expected to take at least five years. Even if our reactor fuel were successfully changed to LEU, it would still be necessary for chemical and biological reasons to use HEU for the target material. The total target inventory, typically 13 kg, could

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not be usefully reduced without increasing the frequency of offsite shipments of irradiated waste HEU target material, an undesirable alternative from a public safety viewpoint.

To comply with the proposed Rule at this facility would require the expenditure of over \$1,000,000 for construction and equipment, and over \$600,000 per year for operation. A position competitive with potential foreign suppliers could not be maintained with such large added costs.

It is urged that, in the interest of reliable medical care for the public, the criteria for application of the Upgrade Rule be such that this facility is exempted from its provisions.

Very truly yours,



K. D. George
Senior Development Scientist

KDG/smf

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