Docket File

UNION CARBIDE CORPORATION
MEDICAL PRODUCTS DIVISION
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September 25, 1979

U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Dr. James R. Miller
Acting A/D for Site and Safeguards

Gentlemen:

By letter of August 15, 1979, we advised you that we did not believe we would be affected by the Upgrade Rule, but we did give some estimates of the cost and impact of upgrading if our belief was incorrect. Our conclusion was based on criteria presently in effect, specifically the 100 R/hr at 3 ft. exemption. It now appears that the criteria are being examined and may be changed, with the distinct possibility that we may become subject to the Upgrade Rule in the future as a Category I facility. This possibility arises not only due to the use of highly-enriched uranium (HEU) in our reactor fuel elements but also due to the necessary use of HEU in the target material for producing medical radioisotopes.

The low-enriched uranium (LEU) program being conducted by Argonne National Laboratory may eventually enable HEU fuel elements to be phased out and replaced by LEU ($< 20\%$ U^{235}) elements. This event is likely to take more than 5 years, however, due to the very high fuel density requirement of our reactor. The LEU test fuel presently being fabricated is suitable only for the lower power reactors. There will still, however, be a need for HEU material for use in isotope production targets, a requirement based on chemical and biological considerations.

Conforming to the proposed Upgrade Rule would have the following estimated impacts:

a. Walls, fences, guard-houses and vaults would have to be constructed; alarm systems and protection hardware would have to be purchased. The estimated capital cost is approximately $1,000,000.

b. A guard force would have to be acquired and trained; operating manpower added for the 2-man rule; security plans and procedures modified and approved. Estimated cost is $50,000 (one-time) and $600,000 annually.

c. The cost of shutting down and decommissioning the facility is estimated as approximately $1,700,000.

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d. Loss of this facility would have a most serious effect on the delivery of health care (diagnostic and therapeutic nuclear medicine) in the United States and some foreign countries. This facility is the only domestic supplier of fission-product $^{99}Mo/^{99m}Tc$, the most widely-used radioisotope in diagnostic nuclear medicine, and of the ^{131}I used in both diagnosis and therapy. While there are some foreign suppliers that may be able to replace some of the loss, it would surely be dangerous to the health of citizens of the United States to place all reliance on such suppliers. It is a fact that our facility has, on a number of occasions, bailed out foreign suppliers when their facility had production problems.

e. The great cost of implementing the Upgrade Rule would mean, that to remain a viable commercial supplier of medical radioisotopes, we would have to pass the additional cost on to the medical consumer. In such a competitive business, however, this action would almost guarantee that supply would soon pass to foreign producers.

f. Closing the reactor facility would also adversely impact the companion activity, production of radiodiagnostics, at this site and conceivably the entire Medical Products Division. The reactor and radiochemical production staff numbers about 65 and the radiodiagnostics staff comprises an additional 32 people. At this site alone a total of about 200 people could be affected.

With the present criteria, viz. formula quantity of HEU = 5 kg and exempt radiation level = 100 R/hr at 3 ft., we are able to operate and be a viable commercial supplier of medical radioisotopes without conforming to the Upgrade Rule. Should either of these criteria change adversely, we could not.

Very truly yours,

K.D. George

K.D. George
Senior Development Scientist

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cc: R. E. Bollinger
D. B. Holzgraf
J. J. McGovern