Office Memorandum • UNITED STATES GOVERNMENT

TO : Lyall E. Johnson, Chief

Licensing Branch

FROM : Clifford K. Beck, Chief

le leffrubech Hazards Evaluation Branch

SUBJECT: MALLINCKRODT CHEMICAL WORKS

We have reviewed the Mallinckrodt application dated February 5, 1959, requesting AEC approval of two shipping containers for uranium dioxide. As you know, we have evaluated previous proposals (Oct. 31, Nov. 14 and Dec. 30, 1958) for these same containers and have found that the individual mass limits proposed for each container were acceptable. However, we have been unable, on the basis of information submitted by the applicant, to approve transportation procedures involving shipment of numerous containers in the same carrier.

The two shipping containers proposed by Mallinckrodt are: (1) a five gallon drum inside a 55 gallon shorty drum, for enrichments of 3% to 10% U-235 and (2) a fifteen gallon drum inside an 88 gallon, for enrichments of 3% or less.

In the February 5 application Mallinckrodt requests approval of the containers on the basis of a comparison with the standard 20" AEC birdcage. Parameters assumed by the applicant for the 20" birdcage were as follows: U-235 content, 11.5 kg; enrichment limit, none; edge to edge spacing, 10.5" (approx. diameter of inner container, 9.5"); matterial to be shipped, solid U metal or compounds. The hydrogen -U-235 ratio was not specified.

Based upon our analysis of the application, we cannot approve the shipping procedures proposed by Mallinckrodt, and suggest that your communication to the applicant include the following:

"We have reviewed your application dated February 5, 1959, for approval of two shipping containers. On the basis of the information presented therein, we cannot approve the proposed shipping procedures for numerous such containers arranged in planar array within the same carrier. The reasons for this opinion are as follows:

a. Comparison of your containers with the standard AEC birdcage is based on parameters for the AEC birdcage which we would not consider acceptable from the bezard point of view. For example, 11.5 kg U-235 as highly enriched UO2 is considerably more than a "limited safe" mass and hence would not meet our present criteria.

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Project SNM-8 Docket 70-36

Lyall E. Johnson, Chief Licensing Branch

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The two shipping containers proposed by Hellinckredt are: (1) a five gallon drum inside a 55 gallon shorty drum. for enrichments of 37 to 10% V-235 and (2) a fifteen gallon drum inside on 88 gallon, for enrichments of 37 or less.

In the February 5 application Mallinckredt requests approval of the containers on the basis of a comperison with the etanderd 20" AEC birdeago, Parameters assumed by the applicant for the 20" birdeago were as follow: H-235 content, 21.5 kg; corichment limit, neme; edge to edge species, 10.5" (approx. dismeter of issuer container, 9.5"); meterial to be shipped, polid I notal or compounds. The hydrogen -V-235 ratio was not specified.

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