

Office Memorandum • UNITED STATES GOVERNMENT

TO : Lyall E. Johnson, Chief
Licensing Branch

FROM : Clifford K. Beck, Chief
Hazards Evaluation Branch

SUBJECT: ENGELHARD INDUSTRIES

DATE: MAY 1 1959

Clifford Beck

We have reviewed the February 9, 1959, letter from Engelhard submitting further information on proposed shipping procedures (ref: Engelhard letters 6/24/58, 9/12/58, and CKB memo 11/19/58).

Engelhard proposes to ship compounds and solutions of uranium, enriched to 40% and over, in a rather substantial 4" ID plastic container which is inserted into a stainless steel container constructed of 5" dia pipe. The pipe is braced in a 55 gallon drum with wood structural members. The volume of the plastic container is about 3 liters. The maximum content of U₃O₈ is 10.5 kg (corresponding to ^{(b)(4)} [redacted] for 93% enriched material).

Less than 40% enriched uranium compounds are to be shipped in a plastic bag inserted into the 5" dia stainless steel inner container within the 55 gal drum. A maximum of 23 kg U₃O₈ will be shipped in one container (equivalent to ^{(b)(4)} [redacted] for 40% enrichment).

We see no objection to the shipping procedures proposed by Engelhard. Our opinion is based on the geometry of the inner container (5" dia) and an analysis of the spacing provided by the 55 gal drums. However, the individual shipping units may comprise far more than limited-safe masses of U-235, and we strongly recommend that it be pointed out that our approval is based on geometrical considerations rather than mass limits.

It is suggested that you include in your communication to Engelhard:

"Our approval is based on geometrical considerations, viz., use of the 5" dia pipe as the inner container together with proper spacing provided by the 55 gallon drum outer containers.

"Please note, however, that, though the amounts you propose to ship are safe in the geometry of the shipping containers described, the amounts are far more than the 'limited-safe masses' (Table XVII, Report K-1019, 4th Rev.) and hence would not be safe in unspecified geometrical configurations. Evidently the basis for the proposed amounts was the curve of uranium mass versus enrichment which accompanied your September 12, 1958, letter. This curve must never be used for calculating safe amounts of uranium compounds and solutions for processing,

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[Signature]

Lyall E. Johnson

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storing or shipping, except where safety is assured with safe geometry of the containers and proper spacing."