

DEPARTMENT OF DEFENSE
MILITARY LIAISON COMMITTEE
to the
ATOMIC ENERGY COMMISSION
P.O. Box 18114, Washington, D.C.

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10 February 1954

LtCol Shoss
X-62673

ACTION ITEM

SUBJECT: Radiological Sterilization of Food
MLC Meeting: 16 February 1954
REFERENCE: Memorandum from D-ACofS, G4, R&D, for
Chairman, MLC, subject as above, dated
4 Feb 54 (15974-20.1)

Reference letter with inclosures is forwarded for
the consideration of the Members, and comments are requested at
the MLC meeting indicated above.



ORIN S. RICHARDSON
Colonel, USAF
Executive Secretary

1 Incl:
Memo dtd 4 Feb 54
w/1 Incl.

WNRC:
RG: 330
ACCESSION#
BOX# 1
FILE NAME:

74-0067
MLC MTG, 16 Feb 1954, Radiological Sterilization
of Food

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT CHIEF OF STAFF, G-4, LOGISTICS
Washington 25, D.C.

GI/F2

February 4, 1954

MEMORANDUM FOR: Chairman, Military Liaison Committee

SUBJECT: Radiological Sterilization of Food

1. Informal coordination by the Department of the Army, General Staff, with the Division of Engineering, Atomic Energy Commission, has resulted in a request by the AEC for a description of the Department of the Army program on radiological sterilization of food and a proposal for a suitable subdivision of joint effort. The above coordination indicated that advancements in present reactor technology and forecasted availability of nuclear fuel for peacetime application are such that a special purpose reactor, as visualized for this program, is both feasible and relatively inexpensive.

2. The attached draft letter, from Chairman MLC to Chairman, Atomic Energy Commission, is submitted for approval and dispatch.

1 Incl
Draft Ltr fr
MLC to AEC w/1
Incl

/s/
K. F. HERTFORD
Brigadier General, GS
Deputy ACoFS, G-4 for
Research & Development

CC: OASD (R&D)
ATTN: Chairman, CGAE
Chairman, CCE&S

D R A F T

DEPARTMENT OF THE ARMY
MILITARY LIAISON COMMITTEE
to the
ATOMIC ENERGY COMMISSION
P.O. Box 1814, Washington 25, D.C.

Dear Mr. Strauss:

The Department of the Army, in accordance with its assigned Department of Defense primary responsibilities for coordination of research and development in food, has initiated a project to investigate the technical aspects of the radiological sterilization of foods. This project has for its ultimate objective the development of acceptable radiological sterilization methods for the improvement of the perishable component of the ration at a substantial reduction in shipment and storage refrigeration requirements. While the execution of the project will be guided strongly by its relevance to Armed Forces requirements, the Department of the Army is keenly aware of the desirability of promoting early acceptance of suitable technology by the food processing industry.

The Quartermaster Corps, Department of the Army, has been assigned the task of executing this project. Timely technical advice and guidance, contributing toward the successful development of this project, is provided to the Quartermaster General by the Subcommittee on Radiological Sterilization Committee on Foods, Advisory Board on Quartermaster Research and Development, National Research Council. The Quartermaster General completed a feasibility study concerning the subject and recommended an expenditure of six million dollars over a five-year period. The FY 1954 planned obligation for this project is \$665,000, tentatively distributed as outlined in the attached inclosure. The succeeding fiscal support will be dependent on the relative promise developed and the impact of expenditure controls on Department of the Army R&D funds.

The project has progressed to a point where it is desirable to arrange for a suitable joint effort by the Atomic Energy Commission and the Department of the Army. Specifically, the following items are proposed for your consideration:

Inclosure 1.

a. A distribution of effort of the project, such that the Quartermaster Corps, Department of the Army, would undertake the food technology aspects, and the Atomic Energy Commission, the radiation technology aspects.

b. A suitable Sterilization Testing Reactor, providing a reasonably high gamma power in usable geometry for irradiation of sample material be designed and constructed as soon as practicable. While the early availability of such a research reactor would greatly enhance the food sterilization program, the overall justification would undoubtedly be based on its very broad application to research on reactor gamma power for peacetime purposes.

c. Suitable authorization and procedures for obtaining gamma sources by the Quartermaster Corps for irradiation work conducted by the Army for this project.

The Quartermaster Corps has been authorized to establish the necessary technical liaison with the Atomic Energy Commission for the coordination of this project.

I would appreciate a statement of the Commission's willingness to undertake its share of a joint effort on this project as proposed above or an alternate suggestion as to how a joint task could be accomplished.

Sincerely,

Robert LeBaron
Chairman

1 Incl
Description
of Proj. No.
7-84-01-002

Honorable Lewis L. Strauss
Chairman
U. S. Atomic Energy Commission

Project No. 7-84-01-002

The Radiation Sterilization program contains ten areas of major emphasis. These areas are evenly divided between (1) prevention of quality losses resulting from irradiation processes and (2) determination of the course of quality losses which must be eliminated to yield a desirable ration product.

Details of the monetary emphasis proposed for each area is shown in the following outline.

1. Prevention of quality losses resulting from irradiation processes.

I. Comparison of different types of radiations \$ 170,000
(In collaboration with Chemical Corps, ARC
and industry)

Phase A. Effectiveness of cathode rays vs.
gamma rays for various foods,
dosages and conditions.

Phase B. Provision of radiated food products
to contractors for specified test
purposes.

II. Increasing acceptability of irradiated foods \$ 15,000

Phase A. Determination of the effect of cook-
ing and blanching on the acceptability.

Phase B. Determination of the effect of enzyme
inactivation on the acceptability.

Phase C. Determination of the effect of different
cooking recipes and condiments on
acceptability.

III. Increase storage life of irradiated foods \$ 20,000

Phase A. Determination of the storage
stability as determined by chemical,
physical, nutritional and accept-
ability measurements, or irradiated
and non-irradiated foods.

Phase B. Development of methods for increas-
ing the storage life of promising
irradiated foods.

Project No. 7-84-01-002 (cont'd)

- IV. Development of suitable containers. \$ 15,000
- Phase A. Evaluation of the suitability of existing container materials and containers.
- Phase B. Development of suitable containers for promising foods.
- V. Feasibility studies on aseptic "canning" of irradiated foods \$ 5,000
- Phase A. Feasibility studies on the practicality of aseptic packaging of foods sterilized by irradiation.
2. Determination of the course of quality losses which must be eliminated to yield a desirable ration product.
- I. Prevention of off-flavors and odors \$ 225,000
- Phase A. Determination of the nature of undesirable changes in foods and non-volatile food components.
- Phase B. Determination of the nature of undesirable changes in volatile food components.
- Phase C. Development of methods of control and prevention.
- II. Destruction of bacteria, molds and insects. \$ 80,000
- Phase A. Mechanism of destruction of bacteria, mold spores and insects by radiation.
- Phase B. Effectiveness of radiation on food poisoning and spoilage organisms.
- III. Control of enzymic deterioration in irradiated foods \$ 70,000
- Phase A. Dosages and conditions of radiations of different types required for inactivation of enzymes.

Project No. 7-84-01-002 (cont'd)

Phase B. Supplementary methods, other than irradiation, for the inactivation of enzymes in a coupled process.

IV. Assurance of non-toxicity of irradiated foods \$ 50,000
(In collaboration with Surgeon General and Food and Drug Administration)

Phase A. Determination of wholesomeness.

Phase B. Proof of absence of induced radioactivity.

V. Maintaining nutritional value of irradiated foods \$ 15,000

Phase A. Determination of losses in nutritional values of different foods.

Phase B. Minimizing vitamin and other nutritional losses caused by irradiation.

TOTAL budget for contracts \$ 665,000

Availability of personnel and equipment to proposed contractors will undoubtedly necessitate shifts in emphasis of some areas as the work progresses.

NOTES:

1. Attention will be divided about evenly between gamma rays and cathode rays during FY '54 - or until certainty is reached as to the particular radiation to be used in production.

2. A meat and a vegetable will be chosen as reference standards among all workers, so that their results can be correlated. Other foods and food components will also be used according to the particular needs of respective workers. Considerable emphasis will be placed on meat.