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Technical Report 7

FOOD IRRADIATION PROCESS CONTROL AND ACCEPTANCE

**REGIONAL UNDP PROJECT FOR
ASIA AND THE PACIFIC**

MISSION UNDERTAKEN IN THAILAND

**FOOD IRRADIATION PROGRAMME PLANNING
FACILITY OPERATIONS AND PILOT SCALE STUDIES RPF1-PHASE III**



UNITED NATIONS DEVELOPMENT PROGRAMME



INTERNATIONAL ATOMIC ENERGY AGENCY

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Report prepared for the Governments of
Bangladesh, China, India, Indonesia,
Malaysia, Pakistan, Philippines, Republic of Korea,
Sri Lanka, Thailand and Vietnam

by

the International Atomic Energy Agency
acting as Executing Agency for
the United Nations Development Programme

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IAEA, Vienna

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ABSTRACT

During the week of 21 through 25 May 1991 a mission was completed at the Thailand Office of Atomic Energy for Peace's "Thai Irradiation Centre". Meetings and discussions were held with Center staff on all aspects of commercial/industrial multipurpose (food and non-food) processing, handling and marketing. Separate meetings and discussions were held regarding the overall food irradiation programme including FAO/IAEA supported projects.

I. INTRODUCTION

A. Terms of Reference:

Advise OAEP on process control, facility operation and food irradiation studies

B. Background Information:

The Thai Office of Atomic Energy for Peace (OAEP) has had an on-going food irradiation programme for nearly thirty years, employing a Gammabeam 650 cobalt-60 R&D gamma irradiator for research and development of various food products including Nham (fermented pork sausages which are almost always consumed without cooking). Small commercial quantities of "nham" pork sausage for parasite elimination plus overall microbial reduction with emphasis on illness - causing pathogens such as the salmonellae, have been irradiated by this irradiator since 1986.

In August, 1989 a new, industrial-scale cobalt-60 automated carrier gamma irradiator was formally commissioned at the "Thai Irradiation Center" outside of Bangkok. Since then, in addition to processing increased volumes of nham sausage this irradiator has been sterilizing medical devices/health-care products and other non-food items in addition to being used in support of research and development activities, notably in the food irradiation area.

A one week mission to the Thai Irradiation Center was undertaken the week of 20 May 1991 to consult on various aspects of commercial-industrial irradiator operation as well as on food irradiation R&D programme planning and pilot-scale trials.

II. WORK PROGRAMME:

The expert arrived in Bangkok from Bombay the late evening of Saturday, 19 May and was met and taken to the hotel by the irradiator plant manager, Sa-Nguan Chiravathanapong. Sunday was an off day and no activity was planned. The entire work week was spent at the Thai Irradiation Center engaged in two basic activities.

The one activity involved discussion meetings and other on-site guidance in various practical aspects of commercial/industrial multipurpose irradiation operation, participated in by Mr. Chiravathanapong plus the irradiator plant staff. Aspects covered included contracting, pricing, billing outside customers, regulatory, dose-mapping, dose-setting for medical sterilization, routine dosimetry, training and qualifying plant employees under-and overdosing, recordkeeping, maintenance and, overall plant management and operation.

The other main activity specifically involved food irradiation, involving meetings and discussions with Mr. Chiravathanapong and Ms. Ampai Ungsunantwiwat, Ph.D., radiation entomologist on research and development programme planning and execution, including laboratory equipment needs, market-testing of irradiated rice and mungbean, global harmonization of laws and regulations and irradiated food export/import. At the end of the week the expert relocated to downtown Bangkok to participate in the UNDP/FAO/IAEA Workshop on Public Information on Food Irradiation the following week.

III. CONCLUSIONS AND RECOMMENDATIONS

Everyone involved in the meetings and discussions at the Thai Irradiation Center considered it a most productive and useful week. Having spent nearly a decade in the North American gamma radiation processing industry, the expert was able to share that experience with the Thai Irradiation Center Staff, most of whom are very new to the technology. Similarly, the expert was able to draw from nearly twenty eight years involvement in all aspects of food irradiation to assist with this programme as well.

A) To the FAO/IAEA: Continue usual programme support, and, in particular, that relating to outfitting Thai Irradiation Center food irradiation research labs.

B) To the OAEP-TIC: apply for USFDA Medical Device Establishment Registration as per discussion during week of 21 May 1991.

IV. PERSONS CONTACTED

Mr. Sa-Nguan Chiravathanapong	General Manager, Thai Irradiation Center
Dr. Ampai Ungsunantrivivat	Radiation Entomologist, TIC
Staff of the Thai Irradiation Center	