NUCLEAR TECHNIQUES TO IMPROVE CHILD NUTRITION (PER/7/003) E4 New

CORE FINANCING

YEAR	Experts		Equipment	Fellowships		Scientific Visits		Training	Sub-contracts	Misc. Comp.	Total US $
	m/d	US $	US $	m/d	US $	m/d	US $	US $	US $	US $	
1995	7/ 0	79,800	100,000	5/ 0	16,500	1/ 0	12,600	-	73,000	-	281,900
1996	6/15	78,000	37,000	5/ 0	17,250	1/ 0	13,200	-	135,000	-	280,450
1997	2/ 0	25,200	-	-	-	0/15	6,900	-	67,000	-	99,100

First Year Approved: 95

OBJECTIVES: To reduce morbidity and physical and intellectual disabilities caused by undernutrition in pre-school children in socio-economically depressed regions of Peru through a two-phase nutritional supplement programme.

BACKGROUND: Malnutrition is the primary cause of 37% of all deaths in children in developing countries; it is a contributing factor in 60% of their mortalities, and stunts mental and physical growth of one in three children (UNICEF 1994). Approximately 2000 million people in developing countries, mostly children, are iron deficient, and 190 million are vitamin A deficient (FAO, 1993). Their 'malnutrition' is due partially to an insufficient amount of food, but is also due to inadequate dietary quality and diversity. Infection also contributes substantially to

'malnutrition'. Poor children under five years of age in developing countries suffer from five to ten episodes of infectious disease per year, as well as subclinical infections. The risk of dying from a given disease is doubled for mildly malnourished children and tripled for the moderately malnourished. In Peru, 37% of children under six years of age (1,300,000) suffer from malnutrition and an additional 27% are at risk of becoming malnourished. The most seriously affected age group is 6-24 months. Recently, WHO, FAO and UNICEF have emphasized dietary modification, including dietary diversity, as a means of improving nutrient availability. A key to developing interventions to solve nutrition problems is the ability to make accurate nutritional assessments and to recommend foods which improve nutrition while making efficient use of scarce resources. Isotope techniques, which have been used to improve nutrition in developed countries, are uniquely and highly suitable for helping to design practical nutritional intervention programmes and for monitoring the effectiveness of such programmes in developing countries.

PROJECT PLAN: Phase I, National Compensation and Social Development Fund (FONCODES) and Food Industry (1994-1995): In Phase I FONCODES will provide a food supplement to 150,000 undernourished children under three years of age in three regions of Peru. FONCODES will delegate its counterpart role to the Instituto Peruano de Energía Nuclear (IPEN) and the Instituto de Investigación Nutricional (IIN). IPEN and IIN will thenceforth conduct assessments of nutritional impact of the food supplement using nuclear technologies transferred from developed country institutes. The new knowledge and capability will be utilized in Phase II. Phase II, Development of Sustainable Intervention (1995-1997): Building on experience gained in Phase I, nutritious food supplements will be developed which use local foods and which sustain significant improvement in nutrition for undernourished children. The specific project activities to achieve these goals are to: transfer nuclear technologies to Peru for evaluating nutritional status and nutrient bioavailability; apply isotope techniques to evaluate the food supplement programme; use nuclear technologies to improve selection and preparation of food products with high nutritional value in which absorption and utilization of macro and micronutrients will be optimal; in collaboration with WHO, evaluate the impact of new WHO vitamin A supplement using *nuclear technologies; train local nutritionists; work* closely with local food industries and village feeding programmes to assure sustainability; from the experience in Peru, develop a package of nuclear techniques in nutrition which can be transferred to developing countries where undernutrition is a chronic public health concern.

NATIONAL COMMITMENT: The estimated total cash and in kind contributions to the project from the host Government is $8,910,000. The Government will ensure that the food products, their distribution and the personnel needed to sustain the food supplement programme are committed to the project. The Government will also provide office accommodation, laboratories, secretaries, workshops and storage facilities together with associated operating costs. IIN is a WHO Collaborative Centre in Child Nutrition and is the site of several projects funded by WHO and the Pan American Health Organization. It will make available nutrition laboratories, diet kitchen, computer centre, nurses, nutritionists, physicians and anthropologists. The Universidad Agraria and local food industries will contribute food technology expertise and laboratory facilities in Phase II.

AGENCY INPUT: The Agency will undertake the following: make available professional experts for setting up nuclear techniques and teaching the national staff to use the techniques; write manuals on appropriate laboratory and related issues pertaining to the techniques; analyse duplicate samples in outside laboratories as a means of quality assurance; provide equipment for isotope analysis; provide isotopes and related supplies; train national staff through scientific visits and fellowships; assist in writing a manual for international distribution on the application of nuclear technologies in developing countries to solve nutrition problems.

IMPACT: Phase I: 150,000 pre-school children will receive a food supplement in one year (1994-95). If the proposed project to perform nutritional assessments increases the impact of the intervention by only 25%, then 37,500 more children will receive significant improvements in nutritional status which they would not have had without the programme. The cost for this in 1994-95 will be approximately $5.74 per person. In applying during Phase II (1995-97), the lessons learned, and using the estimate of 840,000 (40% of 2.1 million) undernourished children under three years of age in Peru, a significant increase in nutritional status in 25% of these children would cost approximately $2.60 per child. The specific nutrition related impact of the project will be to: reduce deaths in infancy caused by undernutrition and common infectious diseases (prevalence 850:1,000,000 infants); increase energy available for growth and activity; reduce prevalence of anaemia in children, which will improve intelligence and stamina; reduce the prevalence of nutritional deficiencies including vitamin A, zinc, iodine, protein, energy and folic acid; reduce the number and duration of hospital admissions for severe malnutrition in children; stimulate local food industry to use nutrition information from this project in developing nutrient supplements and weaning foods; provide the basis for a model of nutrition data collection which can be transferred to other developing countries. An effective programme to reduce iron deficiency is expected to improve children's IQ by 10 points. Estimating the monetary equivalent of the intervention is not easy; however, in three developing countries surveyed, each US dollar spent for anaemia prevention yielded $6 to $58 in benefit, a very favourable cost-benefit ratio.