

GENERAL PRINCIPLES FOR THE ADDITION OF ESSENTIAL NUTRIENTS TO FOODS
CAC/GL 09-1987 (amended 1989, 1991)

INTRODUCTION

The *General Principles for the Addition of Essential Nutrients to Foods* are intended:

- To provide guidance to those responsible for developing guidelines and legal texts pertaining to the addition of essential nutrients to foods.
- To establish a uniform set of principles for the rational addition of essential nutrients to foods.
- To maintain or improve the overall nutritional quality of foods.
- To prevent the indiscriminate addition of essential nutrients to foods thereby decreasing the risk of health hazard due to essential nutrient excesses, deficits or imbalances. This will also help to prevent practices which may mislead or deceive the consumer.
- To facilitate acceptance in international trade of foods which contain added essential nutrients.

1. SCOPE

These principles are intended to apply to all foods to which essential nutrients are added.

2. DESCRIPTION

Definitions

For the purpose of these guidelines:

2.1 *Nutrient* means any substance normally consumed as a constituent of food:

- (a) which provides energy; or
- (b) which is needed for growth and development and maintenance of healthy life; or
- (c) a deficit of which will cause characteristic bio-chemical or physiological changes to occur.

2.2 *Essential nutrient* means any substance normally consumed as a constituent of food which is needed for growth and development and the maintenance of healthy life and which cannot be synthesized in adequate amounts by the body.

2.3 *Nutritional equivalence* means being of similar nutritive value in terms of quantity and quality of protein and in terms of kinds, quantity and bioavailability of essential nutrients. For this purpose, nutritional equivalence means that essential nutrients provided by the food being substituted, that are present in a serving or portion or 100 kcal of the food at a level of 5% or more of the recommended intake of the nutrient(s) are present in the substitute or partially substituted food (extender) in comparable amounts.

2.4 *Substitute food* is a food which is designed to resemble a common food in appearance, texture, flavour and odour, and is intended to be used as a complete or partial replacement for the food it resembles.

2.5 *Fortification or enrichment* means the addition of one or more essential nutrients to a food whether or not it is normally contained in the food for the purpose of preventing or correcting a demonstrated deficiency of one or more nutrients in the population or specific population groups.

2.6 *Restoration* means the addition to a food of essential nutrient(s) which are lost during the course of good manufacturing practice, or during normal storage and handling procedures, in amounts which will result in the presence in the food of the levels of the nutrient(s) present in the edible portion of the food before processing, storage or handling.

2.7 *Special purpose foods* are foods that have been designed to perform a specific function, such as to replace a meal which necessitates a content of essential nutrients which cannot be achieved except by addition of one or more of these nutrients. These foods include but are not limited to foods for special dietary use.

2.8 *Nutrient density* means the amount of nutrients (in metric units) per stated unit of energy (MJ or kcal).

2.9 *Standardization* means the addition of nutrients to a food in order to compensate for natural variations in nutrient level.

3. BASIC PRINCIPLES

3.1 Essential nutrients may be added to foods for the purpose of:

3.1.1 restoration;

3.1.2 nutritional equivalence of substitute foods;

3.1.3 fortification;

3.1.4 ensuring the appropriate nutrient composition of a special purpose food.

3.2 The essential nutrient should be present at a level which will not result in either an excessive or an insignificant intake of the added essential nutrient considering amounts from other sources in the diet.

3.3 The addition of an essential nutrient to a food should not result in an adverse effect on the metabolism of any other nutrient.

3.4 The essential nutrient should be sufficiently stable in the food under customary conditions of packaging, storage, distribution and use.

3.5 The essential nutrient should be biologically available from the food.

3.6 The essential nutrient should not impart undesirable characteristics to the food (e.g. colour, taste, flavour, texture, cooking properties) and should not unduly shorten shelf-life.

3.7 Technology and processing facilities should be available to permit the addition of the essential nutrient in a satisfactory manner.

3.8 Addition of essential nutrients to foods should not be used to mislead or deceive the consumer as to the

nutritional merit of the food.

3.9 The additional cost should be reasonable for the intended consumer.

3.10 Methods of measuring, controlling and/or enforcing the levels of added essential nutrients in foods should be available.

3.11 When provision is made in food standards, regulations or guidelines for the addition of essential nutrients to foods, specific provisions should be included identifying the essential nutrients to be considered or to be required and the levels at which they should be present in the food to achieve their intended purpose.

4. NUTRIENT ADDITION FOR PURPOSES OF RESTORATION

4.1 Where the food has been identified as a significant source of energy and/or essential nutrients in the food supply, and particularly where there is demonstrated evidence of public health need, restoration of the essential nutrients of concern lost during processing, storage or handling should be strongly recommended.

4.2 A food should be considered a significant source of an essential nutrient if the edible portion of the food prior to processing, storage or handling contains the essential nutrient in amounts equal to or greater than 10% of the recommended nutrient intake in a reasonable daily intake (or in the case of an essential nutrient for which there is no recommended intake, 10% of the average daily intake).¹

5. NUTRIENT ADDITION FOR PURPOSES OF NUTRITIONAL EQUIVALENCE

5.1 Where a substitute food is intended to replace a food which has been identified as a significant source of energy and/or essential nutrients in the food supply, and particularly where there is demonstrated evidence of public health need, nutritional equivalence in terms of the essential nutrients of concern should be strongly recommended.

5.2 A food being substituted or partially substituted should be considered a significant source of an essential nutrient if a serving or portion or 100 kcal of the food contains the essential nutrient in amounts equal to or greater than 5% of the recommended nutrient intake.

5.3 Where there is a clear public health reason to moderate the intake of a specific nutrient, the level of this nutrient need not be equivalent.

6. NUTRIENT ADDITION FOR PURPOSES OF FORTIFICATION

6.1 Fortification should be the responsibility of national authorities since the kinds and amounts of essential nutrients to be added and foods to be fortified will depend upon the particular nutritional problems to be corrected, the characteristics of the target populations, and the food consumption patterns of the area.

6.2 The following conditions should be fulfilled for any fortification programme:

6.2.1 There should be a demonstrated need for increasing the intake of an essential nutrient in one or more population groups. This may be in the form of actual clinical or subclinical evidence of deficiency, estimates indicating low levels of intake of nutrients or possible deficiencies likely to develop because of changes taking place in food habits.

6.2.2 The food selected as a vehicle for the essential nutrient(s) should be consumed by the population at

¹ This section remains under review.

risk.

6.2.3 The intake of the food selected as a vehicle should be stable and uniform and the lower and upper levels of intake should be known.

6.2.4 The amount of the essential nutrient added to the food should be sufficient to correct or prevent the deficiency when the food is consumed in normal amounts by the population at risk.

6.2.5 The amount of the essential nutrient added should not result in excessive intakes by individuals with a high intake of a fortified food.

7. NUTRIENT ADDITION TO SPECIAL PURPOSE FOODS

7.1 Nutrients may be added to special purpose foods, including foods for special dietary uses, to ensure an appropriate and adequate nutrient content. Where appropriate, such addition should be made with due regard to the nutrient density of such foods.