



# FOOD FORTIFICATION

## quick guide



### What's the problem?

Vitamins and minerals, also known as micronutrients, are critical for bodily growth, physical and mental development, health and activity. Although micronutrients are only needed in small amounts, a deficiency can have devastating effects. A lack of just one essential vitamin or mineral can lead to a range of health problems, such as birth defects, mental retardation, blindness and death.

Micronutrient deficiencies (MNDs) are the most widespread form of malnutrition, and one of the main causes of disability and death. At least half of all children aged 6 months to 5 years suffer from MNDs, and globally more than 2 billion people are affected.

MNDs have a negative impact on social and economic development. For a child, the consequences include impaired brain development, a lower IQ, a weakened immune system and limited growth – which lead to a loss of education (a hard time learning in school), loss of productivity (less economically active) and vulnerability to infections and diseases (higher healthcare costs). These lifelong burdens not only cost the individual, but also households, communities and entire nations.

Only two micronutrients are made by the body – vitamin D and vitamin K<sub>2</sub>. All the others must be obtained through the diet. A poor-quality diet is considered one of the driving factors of MNDs, alongside poverty. For example, rising food prices drive poor families to eat diets composed of staples like rice, bread or corn. The growth in urbanisation leads to greater consumption of processed food, which lack micronutrients. Snacks and soft drinks, which are high in fat and sugar, are often more available and less expensive than more nutritious foods.

The impacts of MNDs often fall disproportionately on women and children because of the critical nutritional requirements of infancy, childhood, pregnancy and breastfeeding.

Zinc deficiency alone increases the risk of diarrhoea in young children by 33%, pneumonia by 69% and malaria by 56%. Iron deficiency anaemia reduces work capacity. Iodine deficiency has a substantial impact on mental development among children under 5. Conversely, adequate intake of vitamin A in the same age group can reduce mortality due to infectious diseases (most notably measles, diarrhoea and malaria) by 23-35%.



### What is food fortification?

Food fortification is the addition of vitamins and minerals to foods to make them more nutritious. Food fortification started in the 1920s in Europe and North America, with the addition of micronutrients to salt, milk and margarine. In these regions, many conditions associated with MNDs have been eliminated – such as rickets, goitre, beriberi and pellagra.

Women who may become pregnant especially need vitamins and minerals in their daily diet:

- Iron deficiency is one of the largest causes of anaemia
- Anaemia contributes to 20% of all maternal deaths
- Folic acid (vitamin B<sub>9</sub>) prevents most brain and spine birth defects, such as spina bifida
- Folic acid deficiency causes 230,000 preventable birth defects each year



*There are three methods of food fortification:*

**Point-of use-fortification**

the addition of micronutrients (in the form of powders or pastes) to food just before it's eaten. It is especially useful for fortifying complementary foods for infants and school meals for children.

**Industrial fortification**

the addition of vitamins and minerals to commonly eaten foods and condiments during processing. Examples of this are the fortification of flour during milling, or breakfast cereals during production. Industrial fortification can provide a steady supply of micronutrients to entire populations.

**Nutrient-enriched crops**

the process by which the nutritional quality of food crops is improved through agricultural practices and plant breeding. It can be especially effective for reaching vulnerable populations who rely on subsistence agriculture or informal food markets.

Food fortification does not replace the need for dietary diversity, but it does provide additional nutrition for people who have limited or no access to a varied diet, as well as those who have higher nutrient needs – such as pregnant women, children and those fighting illness. As a development strategy, food fortification contributes to several of the Sustainable Development Goals – on poverty, zero hunger, health, education, gender equality, work and economic growth, reduced inequalities, climate and partnerships.

In 2008 and 2012, the Copenhagen Consensus - a panel of expert economists who assess the most cost-effective strategies for addressing global challenges - ranked fortification with micronutrients among the top three international development priorities, in terms of cost : benefit ratio. Every dollar spent on salt iodization and flour fortification results in benefits of more than 10 dollars.

Food fortification can pull families out of poverty, by helping children to grow up healthy, get the most out of their education, and lead productive work lives. As such, food fortification is an essential component towards helping families, communities and nations become healthy, productive and stable.

*"Strengthening national capacities in food fortification"*

