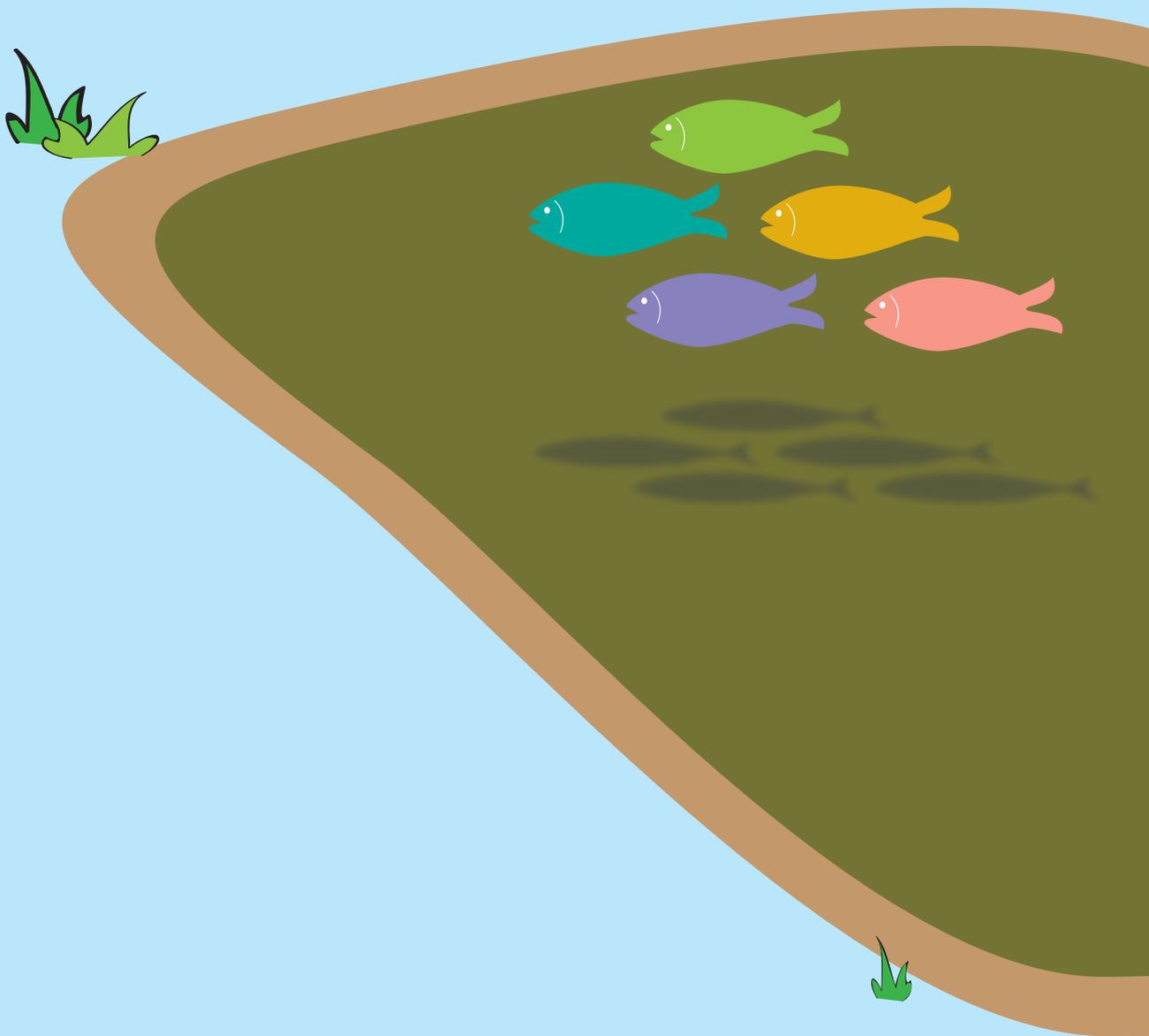


# Five Keys to safer aquaculture products to protect public health



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# Importance in promoting safer aquaculture products to protect public health

Fish is an important animal food source in the diets of more than one billion people. Fish provides essential nutrients such as proteins, essential fats, minerals and vitamins. Over 40 million people in the developing world are engaged in fishing and fish farming.

Since the mid-1990s, aquaculture has been driving the growth in global total fish production and represents in 2015 47% of the total world production. Small scale aquaculture production (commonly referred to as extensive aquaculture production in areas less than a hectare) is increasing all over the world and recognized as a critical resource for meeting current and future demands for food. While there are many national and international guidelines and standards designed for large aquaculture producers the educational materials available to introduce family farmers to the steps needed to produce safe and nutritious fish for themselves, their families and the local communities are limited.

In general, fish and fishery products have a good safety record and a large proportion of foodborne diseases associated with fish are due to lack of good hygienic and good handling practices after fish are harvested. There are, however, a significant proportion of illnesses that are caused by contamination of fish with disease causing microorganisms at primary production stage ( i.e. in aquaculture ponds due to exposure to harmful microorganisms from human or animal feces).

## The work of the World Health Organization (WHO)

WHO works to promote safe food handling practices all over the world and to ensure the same understanding in practice along the full chain - from farm to table. WHO's priorities include targeting those who usually do not have access to food safety education despite the important role they have in producing safe food for their community (e.g. rural workers, women).

As part of its global strategy to decrease the burden of foodborne diseases, WHO develops health messages to educate all types of food handlers, including consumers, on ways to prevent foodborne diseases. In 2001, WHO developed the *Five Keys to Safer Food*<sup>i</sup> which outline the practices needed to ensure safe food preparation in the small food businesses and at home. The *Five Keys to Safer Food* poster has been translated into over 90 languages and has served as the basis for numerous national and local food safety education programmes. Over the past ten years, WHO has extended the *Five Keys to Safer Food* programme to cover additional groups and sectors along the farm to table continuum. In 2012, WHO published the *Five Keys to growing safer fruits and vegetables: promoting health by decreasing microbial contamination*<sup>ii</sup> to support food safety education of rural workers who grow fresh fruits and vegetables for themselves, their families and for sale in local markets.

### Education in food safety goes behind its goal

The extension of the Five Keys concept with the *Five Keys to safer aquaculture products to protect public health* supports the One Health approach, promoting understanding of the links between the health of humans, animals and the environment and how failures in good hygienic practices in one sector can affect the others. The adoption of effective food safety practices when growing and handling fish will have impact on overall hygienic and environmental behaviours, which will contribute to improve community health, protect the environment and build sustainable development.

<sup>i</sup> The WHO Five Keys to Safer Food at: [www.who.int/foodsafety/areas\\_work/food-hygiene/5keys/en/](http://www.who.int/foodsafety/areas_work/food-hygiene/5keys/en/)

<sup>ii</sup> The WHO Five Keys to Growing Safer Fruits and Vegetables: promoting health by decreasing microbial contamination at [www.who.int/foodsafety/publications/5keys\\_growing\\_safer/en/](http://www.who.int/foodsafety/publications/5keys_growing_safer/en/)

## About the Five Keys to safer aquaculture material

### Target Audience

The manual is designed to support food safety education programme for small scale fish farmers who raise fish for themselves, their families and for sale in local markets<sup>iii</sup>. The materials are designed to be used by health educators and aquaculture specialists conducting health and aquaculture training in rural communities.

### Contents

The manual describes the key practices needed to ensure production of safe (and nutritious) fish from where to place the ponds to postharvest handling of fish.

The quality of fish feed influences the quality and the safety of fish production. However the use of added feed is not discussed or recommended in this manual because it is designed for extensive production ponds which receive no intentional feeding but depend upon natural food in the pond.

The Five key practices are: **1) Practice Good Personal Hygiene. 2) Clean the Pond Site, 3) Manage Water Quality, 4) Keep Fish Healthy, and 5) Use Clean Harvest Equipment and Containers.**

### The manual is divided in three sections:

**Section One** explains the basic concepts of chemical and microbial contamination which should be understood by the trainer and explained to the trainee in simple language.

**Section Two** presents the key learnings of the Five key practices, an explanation of why the practices is important, the public health and aquaculture context, and suggestions on how implement the practices.

**Section Three** contains information for the trainer related to the planning of the training, suggested training exercises, an evaluation and a glossary of terms.

### Adaptation

As with all of the *Five Keys to Safer Food* materials, WHO encourages trainers to adapt the non-scientific content of the training material to deliver the messages in the most effective manner for the participants

<sup>iii</sup> Medium and large aquaculture producers should refer to the Good Aquaculture Practices (GAqP) developed by appropriate national authorities or international organizations



## Validation of the manual and acknowledgements

This manual was developed by the WHO Department of Food Safety and Zoonoses with the technical contribution of Dr. Iddya Karunsagar, Senior Seafood Safety Officer, Food and Agriculture Organization of the United Nations (FAO), Dr. Margaret Miller, Senior Researcher, University of Maryland, USA and Dr. Marjorie Davidson, Health Educator, Center for Food Safety and Applied Nutrition, United States Food and Drug Administration (USFDA).

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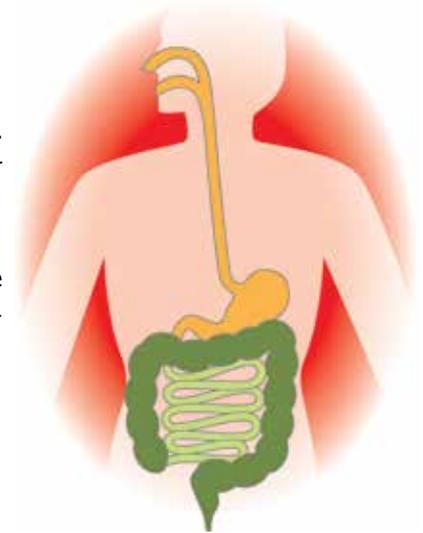
Thanks are also extended to the USFDA for their financial support.

## SECTION ONE: BASIC CONCEPTS

### What is foodborne disease?

Every day, people all over the world get sick from the food they eat. This sickness is called foodborne disease and is caused by either dangerous microorganisms or harmful chemicals.

Preventing contamination is the best way to prevent foodborne disease and improve your health and that of your family and community.



### What are the symptoms of foodborne disease?

Every year, billions of people experience one or more episodes of foodborne disease, without ever knowing that it was caused by food. The most common symptoms of foodborne disease are:

- Stomach pains;
- Vomiting; and
- Diarrhoea.

The symptoms depend on the cause of the disease. Symptoms may occur very quickly after eating the food, or may take days or even weeks to appear. For most foodborne diseases, symptoms occur 24 -72 hours after the food has been eaten.

A small number of foodborne disease cases can result in long-term health problems. Very severe diseases, including cancer, arthritis and neurological disorders can be caused by contaminated food. Some foodborne diseases can be transferred from person to person. Care givers can become sick from

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