



Monitoring of contaminants in food

www.who.int/foodsafety/chem/gems/en/

Collecting data and training people to decrease human exposure to contaminated food

What is the issue?

Unsafe food causes many acute and life-long diseases, ranging from diarrhoeal diseases to various forms of cancer. The monitoring of contaminants in food provides important information on risks associated with the consumption of foods and on the efficiency of control measures that are in place.

What is WHO doing?

Since 1976, the **Global Environment Monitoring System - Food Contamination Monitoring and Assessment Programme**, which is commonly known as **GEMS Food**, has informed governments, the Codex Alimentarius Commission and other relevant institutions, as well as the public, on levels and trends of chemical contaminants in food and their contribution to dietary exposure.

Why is exposure assessment important?

Exposure assessment is a key component of the risk assessment process which should be based on regional, national or even local data for both food consumption and hazard occurrence. In that respect exposure assessment is different from hazard characterization which is often based on internationally published information. WHO develops and promotes the harmonization of methodologies for exposure assessment and encourages the central reporting of national data to serve international scientific advice.

How is the GEMS/Food Programme organized?

The GEMS/Food Programme is implemented by the WHO in cooperation with a network of WHO Collaborating Centres and national institutions recognized by WHO and located all around the world.

The GEMS/Food programme consists of three main areas of activity:

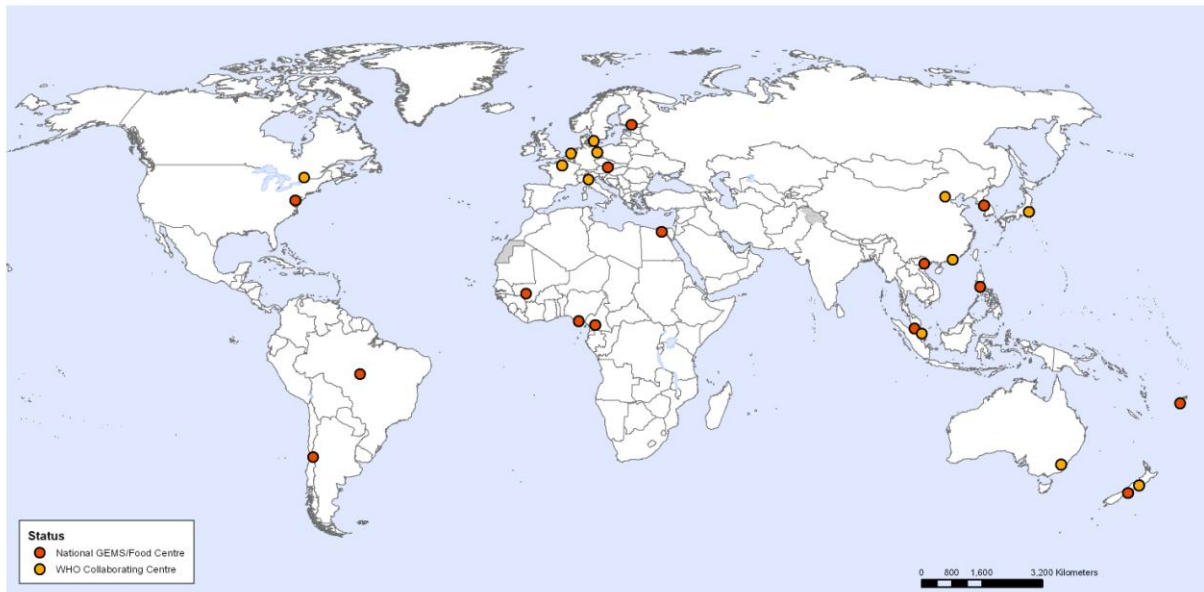
- Data collection for hazard occurrence, food composition and food consumption and sharing information for accurate international risk assessments.
- Training and capacity building at national and regional level for chemical exposure assessment based on Total Diet Studies.
- Development and to dissemination of guidelines and recommendations for exposure assessment methodologies.

Achievements to date

WHO developed an approach to describe the various diets around the world. The GEMS/Food cluster diets were updated in 2006 and resulted in 13 distinct dietary patterns, also called "cluster diets". The clustering of closely related diets was based on the analysis of per capita supply of each such food item available for human consumption in countries, available from the FAO Food Balance Sheets. These cluster diets are commonly used by international committees for exposure assessment to food contaminants and pesticide residues.

The mission of the WHO Department of Food Safety and Zoonoses is to lower the burden of disease from food and animals, focusing on industrialized and traditional production systems, and integrating prevention from farm to table. This work includes the provision of scientific advice, efficient standard setting, and clear communication in support of foodborne and zoonotic disease prevention and international efforts to food-related outbreak detection and response.

GEMS/Food Collaborating Institutions



- The GEMS/Food database collects data to perform acute risk assessment, i.e. unit weights for various food commodities and large portion consumed in various countries (including average body weights for adults and children for countries reporting high consumption)
- The GEMS/Food database also includes more than 400,000 analytical results on the occurrence of about 300 chemicals in food as well as individual food consumption data from more than 40 countries and regions
- Over the last 10 years, nine Total Diet Study workshops have been held for more than 250 people from 60 countries
- Total Diet Studies are implemented in more than 20 countries from which the leaders are actively involved in the GEMS Food network and contribute to improve this methodology.

Planned activities

- Strengthening the network of national institutions reporting to WHO
- Implementation of a new web-based system for data reporting (OPAL-WEB)
- Update of data used for acute risk assessment

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