

## **International Nutrient Database Activities**

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As a nation and as individuals we are participating in an increasingly global environment - trade, economics and banking, telecommunications, and of course, travel. Relative to food composition activities, we see increased global food imports and exports and the promise of continuing growth in the future due to the NAFTA and Uruguay GATT treaties. These trends are further supported by trade growth in other regions such as the continuing developments in the European Union, trade and economic activity in China and Africa.

As health professionals we may participate in the international arena in one of several ways. We may work for a food company that trades products and ingredients at the international level. Many of us develop or manage food composition databases which are used in international studies. Others collaborate with analysts, database managers, etc., in other countries to solve problems common to the generation of food composition data. Finally, many of us conduct surveys, clinical studies, or other assessments of populations including diverse ethnic groups.

The U.S. food supply relies on the availability of a variety of foods procured (obtained) from both U.S. and non-U.S. sources. Sourcing of food stuffs is determined by cost, climatic effects, agricultural and agronomic conditions (insect and disease) supply and demand, and trade agreements (conditions). For example, Table 1 shows the import and export statistics for soybeans between 1977 and 1991. The U.S. is one of the major exporters of soybeans in the world. Statistics for edible oils (olive, rapeseed, and palm kernel) indicate increasing imports of olive and rapeseed oils while imported supplies of palm kernel oil decreased moderately between 1987 and 1991 (Table 2). The U.S. exports significant amounts of orange juice concentrate. For example, 1991 approximately 85 million gallons of concentrate, representing more than one-half of the total U.S. production that year were exported (Table 3 and 4). At the same time, the U.S. may import orange juice concentrate at times during the same year as processed product or to meet manufacturers demands at a time when U.S. supplies are not available. Agricultural statistics for 1991 show large imports of beef and veal from Australia and New Zealand with lesser amounts coming from Canada and Costa Rica (Table 5). Finally data for apples indicate imports from Canada, Chile and New Zealand and exports to Canada, Taiwan, and United Kingdom (Table 6).

These statistics indicate the significant flow of food commodities into and out of the U.S. In addition, many processed single and multi-ingredient formulations enter the U.S. marketplace from other countries. The U.S. food industry exports major amounts of many processed foods as well. Similarly, other countries are involved in food trade as well. Up-to-date and accurate food trade data are needed to complete the tally of available food and to assess the effects of diet on health status. In particular, it is important to identify

sources of the important contributors of components carried by foods in the food supply and to determine specific food composition data for those foods. Food component levels do vary as a result of several (many) factors including brand, cultivar, climate, maturity, distribution, etc.

Both developed and developing countries have documented the incidence of various types of cancers, cardiovascular disease, and diabetes in their countries and all are conditions which have been linked, in part, to dietary effects. In addition, specific micronutrient deficiencies (vitamin A, iron, iodine, etc.) and their effects are still prevalent to some degree in many regions of the world. Not only are we concerned by traditional nutrients, but we are beginning to look at the role of other (not new) dietary components--flavonoids, phenols, dietary carbohydrates, etc. Biological roles as pigments, catalysts, electron transport intermediates, etc. for many of these components have been known but new roles in human metabolism and health are being investigated. International epidemiological and clinical studies are conducted in collaborative arrangements by investigators in developed and developing countries in an attempt to elucidate the etiology of diet-health relationships. U.S. government scientific organizations conduct research and collaborate with other governments to study the etiology, prevention and treatment of various health problems. During 1992, the NIH conducted more than eighty studies in 19 countries concerning various cardiovascular and pulmonary diseases. The National Cancer Institute has collaborated extensively in studies concerning the development, treatment, and prevention of many cancers. As an example, the NCI supports the work of the International Agency on Cancer Research which has begun a prospective 10-year study, EPIC, enrolling 400,000 persons in seven countries to investigate the role of diet in the development of specific cancers. USAID supports international studies concerning high priority nutrients (vitamin A, iron, and iodine). Similarly, other countries are actively involved in global health research. Norway, France, and the Netherlands are collaborators in food and nutrition research taking place in Africa, Thailand, and Indonesia. The National Food Agency of Denmark is currently involved in projects in the Middle East. Universities and regional groups participate in international collaborations.

For many years peer reviewed articles in scientific journals have been retrieved globally. Increasingly, scientific meetings are international in nature. Representatives from many countries meet to share their experimental data and observations about topics of mutual interest such as analytical chemistry, standard reference materials, nutrient metabolism and database development and management. The relatively recent advent of electronic media, especially Internet and facsimile machines have increased global communication about biological and chemical sciences and related subjects. Food and nutritional sciences, including food composition research and applications have benefited from the global and regional communication process.

My objective is to present a summary of recent activities specifically related to food composition database development and to discuss the opportunities for involvement at the international, regional, national and even local level. Several international and regional meetings have been held to address worldwide demands for the development and improvement of food composition data and standardized procedures for accessing and exchanging data.

In October 1992, the International Conference on Nutrition was convened in Rome to develop a world declaration and plan of action for nutrition. Thirteen hundred delegates from 159 nations met to formulate the World Declaration and Plan of Action for Nutrition. According to the Forward of the Conference Proceedings "The World Declaration reflects the pledge of member countries, non-governmental organizations and the international community to eliminate or reduce substantially--within this decade--starvation, widespread under nutrition, and micronutrient malnutrition, which constrain progress in human and social development around the world." The Plan of Action for Nutrition provides a framework for achieving these objectives, ...." The World Declaration went on to cite Vitamin A, iron and iodine as important micronutrient deficiencies which need to be reduced or eliminated. Deficiencies of other

micronutrients such as folate and other B-complex vitamins, vitamin C, selenium, Zinc, and calcium were discussed. Nine action-oriented themes were developed. Several focus on the provision of a safe and adequate food supply. One specifically addresses the need for assessment, analysis, and monitoring of global and regional nutrition situations. Included is the need for "the support and encouragement of the development and use of local food composition data. The International Conference on Nutrition bolstered the foundation for action on the improvement of food composition data at the global level. The availability of accurate and current food composition data are integral (essential) to the solution of worldwide nutrition problems.

In September 1993, the First International Food Data Base Conference was held in Sydney, Australia to provide a forum for the discussion of a wide range of topics related to the development, compilation and use of food composition data. The impetus for the meeting came from the accomplishments of the last 10-15 years in the area of food composition research and data use. Significant accomplishments have occurred in many regions of the world including the revision or initiation of comprehensive handbooks and databases of food composition, the development of improved analytical methods, the recognition of the role of reference materials, and the importance of statistical sampling and appropriate sample handling techniques. Speakers included representatives of the food industry, academia, national government organizations, and international organizations such as the Food and Agriculture Organization. The meeting was held as a satellite to the International Congress of Nutrition, which was conducted in Adelaide, Australia following the Food Database Conference. The Second International Food Data Base Conference will take place in Lahti, Finland, in August 1995 and will coincide with the commemoration of the retirement of Dr. Pekka Koivistoinen, a renowned leader in the field of food composition research.

In March 1994, the Discussion on Food Composition for Developing Countries was sponsored by the Food and Agriculture Organization and the United Nations University. Approximately thirty representatives of government and non-government organizations, including the food industry, academia, and national and international governmental bodies met in Tunis, Tunisia to assess the results of a decade of food composition activity under the auspices of various International, Regional, and National organizations and the International Network of Food Data Systems (INFOODS). A plan of work was developed to strengthen and stimulate international efforts in food composition by providing a network of investigators in developed and developing countries to work together to meet the challenges ahead. The report for the meeting provides the presentations of speakers concerning such topics as food description and nomenclature, data quality indicators, analytical methodology and quality control, training needs, sampling, data base inventories as well as presentations from FAO, UNU, food industry representatives, and representatives from China, Slovakia, Tunisia, Norway, Zimbabwe and others. A regional meeting for Africa will be held in Accra, Ghana in September, 1994 to define the specific needs of African Countries for food composition data and research.

Over 10 years ago the United Nations University (UNU) with the support of the U.S. National Cancer Institute, the Food and Drug Administration, and the U. S. Department of Agriculture conducted a meeting in Bellagio, Italy, of various international experts in food composition research. At that meeting, INFOODS was formed to identify needs and direct and coordinate global food composition efforts to increase the availability of accurate and representative data. During the last 10 years, significant accomplishments have been made to increase food composition data availability on a global level. The INFOODS Secretariat together with other collaborators have published books on various relevant topics and have promulgating standards for identifying components and foods. Regional centers for food composition have been established in Latin America and Oceania.

As an outcome of the recent Discussion in Tunisia, FAO will join with UNU to strengthen and expand global efforts in food composition data. Barbara Burlingame, Director of the New Zealand Institute of Crop and Food Research and Regional Director of Oceania Foods will serve as the Director of INFOODS. Dr. John Klensin is currently directing his attention to a new assignment with MCI telecommunications but will remain with the INFOODS office as a consultant when needed. In the near future, INFOODS will release a newsletter containing an update of recent activities. In addition, the INFOODS directory will be updated and distributed to interested colleagues.

In addition, the recently published book, Food Composition Data: Production, Management, and Use, by Drs. Heather Greenfield, University of New South Wales and David Southgate, formerly of the AFRC Institute of Food Research, Norwich, U.K. is a valuable handbook for those individuals working to provide accurate food composition data worldwide.

The improvement of food composition data is a complex and challenging task. A major barrier to the production and compilation of food composition data at national and international levels is the lack of knowledge and commitment on the part of those responsible for policy formulation and the allocation of resources. It is incumbent upon producers, managers and users of data to act as advocates within their professional networks to stimulate the necessary broad based support for the improvement of food composition data and the critical role these information play in health, research, agriculture, trade and food manufacturing.

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## Soybean Trade, 1977-1991

Year	Imports (metric tons)		Exports
1977	105		16,195,496
1987	10,930		21,592,443
1991	121,476		17,530,932

Source: Agriculture Statistics, 1992, NASS

## Oil Imports, 1977-1991

Year	Olive Oil	Rapeseed Oil	Palm Kernel Oil
	(metric tons)		
1977	24,633	6,876	69,896
1987	63,736	87,317	182,955
1991	98,709	307,127	145,715

Source: Agriculture Statistics, 1992, NASS

## Concentrated Orange Juice: Annual Pack, 1977-1991

Year	(1,000 gallons)
1977	161,204
1987	169,973
1991	151,396

Source: Agriculture Statistics, 1992, NASS

## Orange Juice: United States Exports by Kind 1977/78 - 1990/91

Year	<u>Single Strength</u> (1000 gals)	<u>Concentrate</u>	
		Hot Pack (1000 gals)	Frozen (1000 gals)
1977/78	8198	-	-
1987/88	7560	4,356	54,121
1990/91	0	11,624	85,074

Source: Agriculture Statistics, 1992, NASS

## Beef and Veal:United States Imports, by Country of Origin, 1991

Country	Fresh, chilled and frozen	Canned, including sausage	Other prepared or preserved
Australia	349,831	18	0
New Zealand	211,871	266	0
Canada	80,660	306	476
Costa Rica	21,434	0	0
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<b>Total</b>	<b>709,997</b>	<b>71,570</b>	<b>1,870</b>

## Apples, Fresh:United States Imports & Exports 1990/91

Country	Imports from: (metric tons)	Exports to: (metric tons)
Australia	157	-
Canada	58,382	74,885
Chile	24,720	-
New Zealand	21,704	-
Taiwan	-	60,839
United Kingdom	-	34,919

Source: Agriculture Statistics, 1992, NASS

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