The food industry can play an important role in correcting iodine deficiency

Lucie Bohac Coordinator, Network for Sustained Elimination of Iodine Deficiency, Ottawa, Canada

The role of the food industry in preventing iodine deficiency disorders (IDD) was the focus of a scientific symposium at the Institute of Food Technologists Annual Meeting in New Orleans, Louisiana, June 11-14, 2011. There were four speakers in the symposium, and their presentations are summarized below.

Lucie Bohac, Network for the Sustained Elimination of Iodine Deficiency: “Importance of Food Industry Salt for Improving Dietary Iodine Supplies”

Ms. Bohac began the session by setting the context: 2 billion people around the world are at risk of iodine deficiency and an estimated 38 million infants are born each year unprotected from potential brain damage. Universal salt iodization (USI) intends that all salt for human and animal consumption is iodized. Yet in practice, legislation tends to apply only to table salt. The WHO’s recommended level of iodization is >15ppm iodine and <40ppm, at household level. The iodine content in the salt supply is regulated by a country’s legislation that permits salt iodization and sets the standard for iodine content at production. Analysis of legislation of countries worldwide shows great variation. For example, in the US, salt iodization is voluntary. In Canada, iodization of table salt is mandatory but not permitted in processed foods except for baby formulations. In France using iodized salt in processed foods is not permitted. In China use of iodized salt is mandatory with the exception of pickles and also certain regions of the country where there is a naturally high iodine level in the ground water.

Countries that do use a combination of table salt and use iodized salt in a particular food product modify the iodization levels to ensure that the optimal amount of iodine reaches the population.

Trends in consumption are changing. In industrialized countries, approximately only 15% of daily salt intake comes from table salt, while in many developing countries or more remote regions salt is added at household level, thus making it the source of sodium in the diet.

However, the trend towards greater consumption of meals prepared outside the home is becoming more prominent. Evidence suggests that increased consumption of processed foods goes hand in hand with increased urbanization, rising incomes and women’s employment.

As salt reduction programs are spreading across the industrialized world, there has been some evidence that this could impact the use of iodized salt. For example, recent National Health and Nutrition Examination Survey (NHANES) data in the US revealed that 56% of the female respondents indicated they rarely use table salt. In addition, there are studies that show that a salt restricted diet may leave certain targets groups, such as women, with below optimal iodine nutrition. In Western countries, 70% - 75% of the total sodium intake comes from processed foods. This suggests that countries relying only upon the iodization of table salt will need to review consumption patterns and consider adopting a more comprehensive approach to supplying adequate iodine.
Sarah Ohlhorst, American Society for Nutrition:
“Current Role of Food Processors in Iodine Fortification of Food Products”

Concerns about using iodized salt in processed foods fall into the following categories: concerns about changes in the taste, smell or changes to food product, trade barriers and health. In 2007, the Iodine Network commissioned a review of the use of iodized salt in processed foods. This review of 35 studies looking at organoleptic properties and iodine stability showed no effects attributed to the iodine in the salt. The studies focused on food quality, iodine retention and effects of cooking and heating as well as nutritional and technological aspects of iodine.

Trade barriers are created when there are different regulations and standards relating to the use of iodized salt in processed foods. For example, in highly interconnected trade regions such as Europe, cheese made with iodized salt cannot be imported to France where legislation does not permit the use of iodized salt in processed foods. Recently there have been questions raised about how to manage the intersections of salt intake reduction programs and salt iodization programs. There is overall agreement that these two programs are compatible as iodization levels can be adjusted when salt consumption (or consumption of food products that use iodized salt) patterns change. However, it is important to monitor the iodine status of the population as well as maintain good oversight over production to ensure that correct iodization levels of salt.

Ms. Bohac concluded by indicating that the food processing industry can contribute to iodine nutrition by using iodized salt, by using food science to address organoleptic concerns and by ensuring product quality assurance.

This presentation gave the highlights of the results of an IFT study (funded by The Micronutrient Initiative) to determine the use of iodized salt in processed foods worldwide and food processors’ knowledge of iodine nutrition. Phase 1 of the project looked into the consumption of processed foods in 39 countries around the world and gathered information on the types of processed foods consumed, including their sodium content, and also the levels of consumption by different socio-economic groups. As well, major food processors and salt suppliers were identified and information was gathered about the approaches to influence sodium intake and iodine fortification. Finally the study looked at the enforcement of these approaches.

The results indicated that there were considerable consumption information gaps, especially pertaining to processed foods consumption. Meanwhile, in many of the 39 countries reviewed, food insecurity was often linked to iodine deficiency. Consumption patterns for processed foods were not present particularly in developing countries as many lacked nationwide food consumption data and published academic studies tended to focus on smaller population subsets. Although processed food consumption is influenced by income and region of the country, the level of IDD burden did not correlate with processed food consumption.

However, processed food is more often consumed in industrialized countries, whereas food is minimally processed in developing countries. Iodine legislation may exist in a country; however, it is not always effective because there are difficulties with monitoring compliance and enforcement of the legislation.

Phase 2 of the study consisted of an electronic survey of food processors followed by detailed telephone interviews with a small sample group of select company representatives from 16 countries to determine their use of iodized salt and sources, their awareness of iodine nutrition and salt as a fortification vehicle. The results showed that most respondents have some iodine nutrition understanding, although IDD is not often discussed in food companies. Food processors do use iodized salt when

Iodized salt does not change the color or taste of processed foods
required by legislation, both in products that require it and/or for products sold in countries that require iodized salt use. Legislation is viewed as important in providing company incentive to iodize and also by creating a level playing field within the market. Salt suppliers in developing countries did state difficulties in undertaking iodization, including lack of technical capacity and resources. Survey and telephone respondents noted numerous challenges including operational, political and market challenges.

Ms. Ohlhorst concluded by outlining future research needs; first, nationwide food consumption data is needed to determine the need for legislation, including setting the standard for iodization, and ensuring adequate iodine consumption, while avoiding overconsumption. Second, food science research can assist in determining the amount of iodine after food processing and ensuring iodization does not impact taste or other qualities of food.

Branka Legetic, Pan American Health Organization:
“Getting a double win for public health: Food processors opportunity to support the optimization of iodine nutrition and sodium intake”

This presentation focused on the importance of collaboration between iodine fortification and dietary salt reduction programs. A 2007 report of a WHO expert consultation, “Salt as a Vehicle for Fortification”, confirmed the compatibility of these two policies. In 2009, the Iodine Network called for data on projected trends of salt consumption to inform national iodization programs in order to enable on-going efforts to calibrate iodine fortification levels to ensure appropriate population iodine intakes. Also, the 2009 Policy Statement for the Americas, “Preventing Cardiovascular Disease in the Americas by Reducing Dietary Salt Intake Population-wide” reaffirms that salt intake should be reduced without compromising micronutrient fortification efforts and that national governments are to review national salt fortification policies and recommendations to be in concordance with the recommended salt intake.

In early 2011, PAHO convened a meeting of experts and stakeholders to discuss the potential for collaboration between these programs in the Americas and discuss how this could be taken forward (see photo). With the goal of securing optimal salt and iodine intake in the Americas, the intent was to bring together the state of public health knowledge and experience in iodine fortification and salt reduction in order to draft an outline of a framework for collaborative action. The proposed Framework for Collaborative Action comprised of five areas: common and coordinated messaging, common advocacy platforms, concurrent surveillance, strategic joint research and shared forums with relevant sectors of the food industry. Common and coordinated messaging would take place at global, regional and national levels to ensure that there is consistency in messages across all stakeholders from decision makers to industry to health professionals and consumers. Common advocacy platforms would be directed at national governments to:

• implement and monitor IDD programs,
• coordinate iodine fortification and dietary salt reduction programs including the adjustment of iodine fortification based on salt consumption and on population requirements,
• emphasize the importance of optimal iodine intake,
• Indicate the health benefits and cost savings to health care systems of dietary salt intake reduction.

Collaboration in the surveillance of both salt and iodine intake would include:
• looking at methods that optimally assess and monitor salt and iodine intake,
• undertaking food surveys to distinguish the main sources of salt and iodine in the diet (including potassium where a public health concern),
• methods that account for vulnerable and diverse populations,
• establishing, promoting and supporting laboratory proficiency for iodine, salt analysis,
• knowledge, attitudes and behavior surveys on salt consumption, and
• monitoring developments in the food industry such as nutrition labeling and iodine content.

Strategic joint research would be intended to fill knowledge gaps relevant to both salt iodization and reduction of dietary salt including pilot and case studies of countries of differing economic and cultural make-up. The final component of the framework, shared forums with the relevant sectors of the food industry, would include the promotion of universal salt iodization, improved capacity and technology of the salt industry, particularly with respect to the sector of small-sized salt producers and would promote the calibration of iodization levels based on different salt intakes.

The next steps identified were to bring the framework to the main stakeholders in iodine nutrition and salt reduction programs in the Americas to review and accept the framework and to approach countries in Central and South America to undertake a pilot of the coordination of the two public health policies. Ms. Legetic concluded her presentation by noting that sodium reduction is a “hot” topic in the food industry, universal salt iodization is necessary in order to prevent iodine deficiency disorders, and there is a need to adjust iodization standards based on salt consumption. The food processing industry should be using iodized salt in their products while at the same time reducing the salt content.

Inka Beck, Nestlé S.A.:
“Investing in iodized salt makes sense”

This presentation gave the food processing industry perspective on the subject and used Nestle’s Maggi brand as a case study. Julius Maggi was an entrepreneur who invented a liquid sauce with a meat-like taste for seasoning food. Since the use of condiments like Maggi flavoring cubes in food is widespread and Nestle has world-wide penetration with many of its products, the company seized on the opportunity to use its products to deliver essential micronutrients such as iodine. In fact, 90% of Maggi products are fortified with iodine, primarily through the use of iodized salt. Maggi products are not fortified mainly in countries that do not permit the use of iodized salt in processed foods.

The use of iodized salt in culinary products has the advantage of increasing the overall coverage of iodized salt, even in the face of salt intake reduction. Furthermore, changes in salt consumption imply the need for iodization beyond simply table salt. Studies have shown that discretionary salt (table and household cooking) use has decreased while food salt (from processed and ready-made foods) has increased, particularly in industrialized countries. In addition, by iodizing popularly positioned products, consumers with low income and those in rural areas can have improved access to iodine sources. For example, in Central West Africa, where the percentage of households using iodized salt ranges from as low as 1% in Guinea-Bissau to over 95% in Nigeria, good penetration of Maggi cubes reaches people where iodized salt is less available.

There are advantages to using iodized salt in culinary products. As a food processing company Maggi ensures quality assurance of their products such that culinary products are delivered in functional packaging that prevents nutrient loss due to moisture and light. In addition, the company undertakes audits of the salt suppliers and monitors quality of the iodized salt. Finally, from the perspective of a food manufacturer, being able to procure iodized salt is not only logistically easier but also less costly than undertaking to iodize the salt itself.

There are challenges to using iodized salt, however, the main one being the variations of regulations in trade regions. For example, in Europe, which has the highest prevalence of IDD according to WHO, some countries permit the use of iodized salt, others do not, or they permit different fortificants (iodide or iodate). There are also different standards of iodization. These factors make it very difficult for food processors to reformulate as per country specifics rather than be able to use a harmonized approach across a trade region.