

(A complete version of this article can be found in: Disasters 2007;31 Suppl 1:S139-49.)

# Accelerating progress on salt iodization in Sudan: time for action

In the almost 15 years since the World Summit for children, Sudan has made no progress in making iodized salt available to households. Currently, it is estimated that less than 1 per cent of Sudanese households have access to iodized salt. This means that every year over 1 million Sudanese infants are born unprotected from brain damage and learning disability from iodine deficiency.

**Ibrahim Bani** Technical Adviser, the Micronutrient Initiative, Jazan University, Saudi Arabia



## Background

In Sudan iodine deficiency is a serious public health problem. The prevalence of goiter ranges from 5.4 per cent to 42 per cent, and the average rate nationally is 22 per cent (1). The IDD problem in Sudan is severe in the mountainous areas of Darfur and Blue Nile state where goiter rates are as high as 87 per cent and 75 per cent, respectively. Kordofan state is also known for its high prevalence of goiter, with rates of 59–79 per cent. Many of Sudan's 15 million children are malnourished and iodine deficient, and the situation for many women and children in the Darfur region is critical (2). In the Darfur

region, a median urinary iodine concentration of 20 µg/L has been detected. Levels in southern Sudan – especially the Upper Nile region – are similarly low.

IDD control programs began in Sudan in the mid-1970s, with the targeted distribution of iodine capsules, and continue in some areas today.

strategy for iodizing salt. Sudan adopted USI as a National IDD prevention strategy in 1994 and Ministerial Decrees issued at the time require all edible salt to be iodized to a level of 50 ppm using potassium iodate. Several amendments to these decrees have been issued since but these have not been enforced. One declaration called on all salt



A National IDD Program was launched in 1989. A technical committee for IDD control was set up in 1991 and given the tasks of distributing iodized oil and devising a long term

producers to ensure that their salt was iodized, and allowed salt iodization using either potassium iodate or potassium iodide.



**Noniodized rock salt is widely available in markets**

### Salt production, distribution and pricing

Almost all of Sudan's salt is produced along the Red Sea coast through solar evaporation of brine (4). In the Port Sudan area there are 11 salt producers, of which the Ba'boud Salt Company and the Sudan Salt Company are the largest. According to the Sudanese salt industry, the total quantity of raw salt produced in the country is 150,000–175,000 tons per year. For its estimated population of 34 million, Sudan would require about 140,000 tons of salt per year for edible use. The price in Khartoum for a 500gram bag is SD 50 (USD 1=SD 200). In the absence of government controls on the price of salt, market forces determine its availability and price to the consumer. A number of Government levies on salt seem to be one of the reasons for the high price of salt to the consumer in Sudan. Levies and taxes are equal to 100–137 per cent of the cost to produce the salt. Salt is mainly transported by road from Port Sudan to Khartoum and other urban centers. Distribution to rural and mountainous areas is a serious problem – particularly in terms of its cost. Sudan is a vast country and

various approaches must be devised to ease transportation and distribution problems.

### Salt iodization

Following a 1993 WHO feasibility study, UNICEF supplied the two major salt producers with 12 iodizing machines – six each for the Ba'aboud Company and the Sudan Salt Company. The Federal Ministry of Health (FMOH) received 150 tons of iodate for distribution. The equipment and materials were supplied to producers in 1995 through the FMOH.

Major challenges have stood in the way of universal salt iodization in Sudan in recent years. The poor quality of salt meant that the iodizing machines developed problems and that the producers were faced with production difficulties from the start. The two main problems were the high level of moisture in the coarse salt and the large size of the crystals,



**Getting iodized salt to displaced families is a priority**

which slowed output capacity from 7.5 tons per hour to 4–5 tons per hour. As a result of these problems the Sudan Salt Company asked for the machines to be removed, while the Ba'boud Company adopted a different strategy and invested in a new salt refinery. Currently, only about 3000 tons of salt is iodized in Sudan, of which 2000 tons is supplied to WFP for food aid and only 1000 tons is sold on the open mar-

ket. Only around 3 per cent of total salt production is iodized.

In July 2006 the Industry Ministry instructed all salt producers to fortify all salt with iodine. The governments in the states most affected by IDD, Darfur and Kordofan, are politically committed to enacting, and enforcing, the required legislative measures to ensure that only iodized salt is marketed in the areas under their jurisdiction. The tariffs, taxes and duties attached to this commodity are also being waived. In November 1997 iodization of salt started in Nyala, South Darfur state, using machines supplied by UNICEF. By January 1998 production of iodized salt reached 330 tons and a year later it doubled to 660 tons. In addition to the production of iodized salt, the local salt producer, Buscom, has implemented effective distribution and promotion methods. Iodized salt is sold to the public in the streets by means of trolleys similar to ice cream

carts. Even so, use of iodized salt in the state is still low because of a lack of awareness and inefficient social marketing. No health communication strategies have been implemented to increase the awareness of the population of the importance and to promote

the use of iodized salt.

### Major challenges

■ Despite adopting a USI strategy over a decade ago, major challenges still stand in the way of universal salt iodization in Sudan. There is a lack of awareness at all levels from medical professionals to administrators to consumers about the importance of the iodization of salt, and a related

lack of an appropriate strategy for creating demand.

■ Salt producers and manufacturers face problems with salt iodization technology. There is limited knowledge about and training on proper techniques for the people involved in salt production and iodization. The limited production, distribution, and supply of iodized salt, and problems with access to markets because of poor infrastructure, increase the cost of salt substantially.

well targeted or adequately applied. There is a lack of appropriate information about IDD among key senior officials and in the public sector generally.

■ Coordination among stakeholders is weak. The main coordination is through the National Fortification Alliance, which meets irregularly and requires support. Resources provided by donors are not adequately used because there is a lack of support after handover. There is little owner

links to other national priorities such as child survival, universal primary education and poverty reduction.

■ Develop the national capacity to maintain USI policies: The national capacity to maintain USI policy should be continuously strengthened. Elements of national capacity include adequate resources for the salt industry to continue the production of iodized salt, training for salt producers in proper salt production techniques, the constant renewal of policy advocacy, and national monitoring of iodized salt deliveries to secure a continuous supply of iodized salt to vulnerable groups coping with emergencies.

■ Increase salt production and processing: There is a need, as a priority, to increase local production of a sufficient supply of adequately iodized salt. The commitment to USI needs to be translated into investment in a private sector that can produce, package, distribute, and market adequate quantities of good quality iodized salt.

■ Devise a national plan for safeguarding nutrition in emergency contexts: The Government of Sudan must ensure that the national policy framework makes provision to ensure the supply of iodized salt in emergency situations, including for displaced populations such as in Darfur. WFP and other agencies should ensure that all the salt distributed to displaced persons is iodized and, as far as is possible, locally purchased to support the local salt industry.



Heavy taxes and levies reduce profitability in the salt industry, and its ability to invest to improve quality and increase levels of salt iodization. This leads to an underreporting of production, thereby compounding the difficulty of monitoring and program planning.

■ There is no system in place to regularly monitor salt production and iodization. Although legislation exists it is not enforced and, therefore, there is no deterrent against the sale of noniodized salt.

■ There is a complete absence of any kind of media (radio, TV, newspaper, etc) activity to promote the use of iodized salt. The advocacy messages that are produced and used are not

ship and commitment from the recipients of donated resources.

### Areas for priority action:

■ Political commitment to the implementation of IDD: With the reality on the ground, outlined above, in mind, it is vital that the Government of Sudan renews and reiterates its political commitment to implementing the IDD control program by promoting universal access to iodized salt for its population.

■ Establish USI as a national strategy: USI must be established as a national strategy in order to achieve the virtual elimination of IDD. It must be a priority on the government's policy agenda with strong