

SUPPORTING SALT PRODUCERS TOWARDS OPTIMAL IODISATION OF HOUSEHOLD SALT IN SOUTH AFRICA

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Salt producers represent an indispensable, key group of role players in the provision of sufficiently iodised salt in any country. A continuous supply of adequately iodised salt is necessary for sustainable optimal iodine nutrition in any population that has experienced iodine deficiency in the past, as has South Africa and many other countries in the region.

Globally and nationally, optimal iodine nutrition has been recognised as critical to ensure normal mental development and functioning of children and adults. Other benefits of optimal iodine nutrition include prevention of iodine-deficiency disorders (IDD) such as goitres, hypothyroidism, reproductive failure, cretinism and childhood mortality.

From a public health perspective, health authorities are therefore obliged to implement preventive and control measures to eliminate iodine deficiency. To achieve this goal, iodised salt has proved to be the most successful public health intervention in many countries.

What is the situation in South Africa?

Direct and indirect evidence of continued iodine deficiency and endemic goitre in South Africa - despite optional iodisation of salt - justified the introduction of *mandatory* iodisation of table salt at an elevated iodine concentration of 40 to 60 ppm at the end of 1995. This legislation applies to salt for human consumption (not to agricultural salt for animal use).

Favourable effects of mandatory iodisation on the iodine status of children were observed after 1 year, but cases of goitre took longer to recover.¹ A national IDD survey conducted by the South African Institute for Medical Research in 1998 on behalf of the Department of Health (DoH) reported national and provincial median urinary iodine concentrations in the 'iodine replete' range, a major improvement in iodine status compared to earlier studies.² However, evidence of iodine deficiency was found in 16% of 179 schools visited during the national survey, and high goitre rates (although the goitres were small) in all of the 49 schools assessed for thyroid size.

Other studies indicate that the international goal of 90% of households using adequately iodised salt has not been achieved in South Africa. A national survey of the iodine content of household salt recently showed that 62,4% of households use adequately iodised salt,³ considerably short of the international goal of

90%. In the three northern provinces coverage was below 50%, and as low as 39% in the Limpopo Province. One of the possible reasons for this is the *under-iodisation of salt at the production site*.

With the introduction of mandatory iodisation in 1995, an important public health responsibility was placed on the shoulders of the *salt producers*. They are indispensable towards achieving the international goal of 90% of households using adequately iodised salt, and averting grave consequences such as brain damage and other IDD in children and adults. They can increase the accuracy of salt iodisation and reduce the variation observed in iodine concentrations in retail and household salt. **The salt producers should be seen as the primary role players implementing the salt regulation.**

All countries that have implemented a national iodisation programme should also have a functional monitoring system in place. In some countries the iodisation programme (even mandatory iodisation) has failed because of the lack of such a functional monitoring system. *Monitoring the iodine concentration of salt is seen as one of the cornerstones determining the sustainability of successful iodisation.* Monitoring of the iodine concentration at the production sites, as well as at the retail and household levels, should be performed regularly and should be an integral part of a national iodisation programme.

Since the mandatory regulations on salt iodisation came into effect, the DoH and the MRC have conducted external monitoring of the iodine concentration of retailer salt.⁴ Annual Retail Salt Surveys conducted by environmental health practitioners have shown an increase in the iodine concentration of salt at retail level. The 2001/2002 Retail Salt Survey showed that 77,6% of salt contained more than 15 ppm.

The MRC conducted a national survey of the iodine content of household salt in 1998.³ UNICEF also commissioned the MRC on behalf of the DoH to assess iodine concentrations and internal monitoring procedures at production level.⁵ In brief, the results indicated that of the 74 salt companies registered with the Department of Minerals and Energy, 12 producers, some representing groups of salt companies, are currently iodising salt for human consumption. **The overall distribution of iodine concentration in salt samples obtained from these producers and analysed by the titration method showed that 31% of salt complied**

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with the legal requirement of 40 to 60 ppm, and 58% of salt contained more than 30 ppm of iodine, but 35% of the samples contained less than 20 ppm at the production site.

Recommendations and follow-up actions

Follow-up actions and recommendations were formulated to help those salt producers requiring assistance to produce adequately iodised salt, and to strengthen and sustain the successful production of those producers who were iodising salt sufficiently:

1 Up-to-date register of salt producers

iodising table salt: Interaction with the salt producers during the investigation of iodine concentrations in salt at production level, and the feedback of results, laid the foundation for continued liaison with the salt producers. The register of South African salt producers involved in iodising salt created during this investigation needs to be regularly updated to maintain a record of producers who should share in relevant information on IDD control as it becomes available.

2 Establishing linkages:

The Directorates of Nutrition and of Food Control of the National DoH, UNICEF and the Nutritional Intervention Research Unit of the MRC recently established the South African Iodine Deficiency Disorders Network to ensure co-ordination of IDD activities and a flow of related information among all role players involved. Ideally other role players involved in implementation, monitoring and evaluation of the national salt iodisation programme (e.g. representatives of the salt industry) also need to join the Network. This Network will also act as a link between international health agencies and South African salt producers. The common objectives should be to improve knowledge regarding the control of IDD, to assist the salt producers to improve the accuracy of iodisation and reduce the variation in iodine concentration in salt, and to increase the national and provincial percentage of households using adequately iodised salt to at least 90%.

3 Introducing an information, education, and communication (IEC) programme:

An IEC programme to inform and educate salt producers about the prevention and control of IDD, emphasising the salt producers' role, was structured to build on the momentum created by interaction with the salt producers. The following IDD material will be mailed to the salt producers at various intervals as part of a co-ordinated IEC strategy: A summary report of the present salt producers' study; the IDD booklet, pamphlet and poster produced by the Directorate Nutrition of the DoH and UNICEF; user-friendly summaries of published research data; the recently revised World Health Organization manual

(2001) on *Assessment of the Iodine Deficiency Disorders and Monitoring their Elimination*; and other relevant material that may become available.

4 Remedial action to improve the salt iodisation process:

Remedial action is required to motivate and encourage those salt producers responsible for the substantial proportion of under-iodised salt, to rectify their iodisation process. Consideration should be given to the possibility of appointing a consultant to advise salt producers who need support to improve their existing iodisation process or to start iodising salt. Particular attention needs to be focused on problem areas in the iodising industry, i.e. some of the medium, potentially significant and peripheral salt producers.

5 Improving internal quality control:

Since shortcomings existed in the internal quality control of many salt producers, they should be encouraged to implement a comprehensive internal quality control system. Producers not yet using the titration method for internal monitoring should be supported in establishing small industry-based laboratories for routine monitoring of the iodine content of salt using the titration or equivalent method. Standardised analytical methodology should be made available to all salt producers, including those already applying the titration method.

6 Follow-up evaluation and monitoring:

It is proposed that a follow-up study evaluating the intervention effects of the IEC programme as well as of the interaction with salt producers should be conducted in the next year. In this way the intervention effect of the baseline study, the feedback and the IEC material on perceptions and knowledge of IDD and on the iodine concentration of their salt will be evaluated. It is extremely important that external monitoring of the iodine concentration of iodised salt at the production sites be continued on a regular basis - preferably twice to three times annually, but not less than once annually.

7 Training environmental health practitioners:

In a series of three training sessions conducted in 2001, the DoH, UNICEF and the MRC collaboratively trained more than 100 environmental health practitioners from all 9 provinces in the country on the background, motivation, implementation and monitoring of the national salt iodisation programme. The core group of these environmental health practitioners serving the local authorities where the salt producers are located need to be linked in a register to the respective local and provincial health authorities and to the respective salt producers in their areas, to enhance mutual collaboration with the Network. They should also be alerted to

keep a watchful eye on new entrants to the iodising industry to ensure appropriate registration and follow-up.

8 Laboratory methodology: Scientific problems and opportunities identified during the study need to be pursued, e.g. establishing the correct analytical method for analysing iodine in salt produced in an environment with high alkalinity, standardising analytical methodology, and investigating the potentiometric method of analysing iodine in salt.

In conclusion, credit is due to the dedicated salt producers who produce salt complying with the legal requirement, who are informed about the prevention and control of IDD, and whose efficient internal quality control procedures are instrumental in producing sufficiently iodised salt. Their contribution towards the remarkable progress in eliminating iodine deficiency in South Africa needs to be acknowledged, and they should be encouraged to sustain the production of adequately iodised salt.

However, a substantial percentage of producers' salt is still under-iodised, and shortcomings exist in the perceptions and knowledge of IDD, as well as in the internal quality control procedures of some salt producers. The actions outlined above will assist and support all salt producers towards optimal iodisation of household salt, which is critical for achieving the international goal of 90% of households using adequately iodised salt.

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