

Universal Salt Iodisation (USI) in India – Current Situation and Proposed Actions

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Universal Salt Iodisation in India – Current Situation and Proposed Actions

I Background

India's effort to achieve the goal of universal salt iodization (USI) assumed a new dimension with the international focus on elimination of IDD. The 43rd World Health Assembly Resolution, the World Summit for Children and the second SAARC conference resulted in giving new impetus to the national effort in the elimination of IDD. In India, the programme focus in 1992-97 shifted from a mere Ministry of Health Programme to working intensively with the Salt Department under the Ministry of Industry as well as involving Ministries of Railways, Food and Civil Supplies and Human Resource Development.

At the global level, the goal for sustained IDD elimination was renewed at the UN General Assembly Special Session for Children in May 2002, with a commitment to achieve sustainable elimination by 2005. To reinforce activities on IDD elimination worldwide, a Global Network for Sustained Elimination of Iodine Deficiency was founded and announced at a special event of the UN General Assembly Special Session in 2002. The Network is an alliance of major organizations that share a common commitment to assist countries to reach the goal of sustained elimination of iodine deficiency through salt iodisation.

In 2006, the progress was reviewed by UNICEF at a Dubai meet of 16 “make or break” countries including 4 South Asian countries, under the title “IDD Elimination Programmes: Challenges, Problems and Solutions.” India was one of the four south Asian countries which participated in preparing the action plan for meeting the USI challenge. The progress made in the implementation of the action plan was reviewed in April 2007 at a meeting held at Jaipur, India.

The objective of this consultancy assignment was to study iodised salt production scenario with a view to recommend measures to increase production and universalize consumption of iodised salt in India. The consultancy report is based on field visits undertaken to three salt producing states between June and September 2007 – Gujarat, Tamil Nadu and Rajasthan. It may be noted that as per the terms of reference, field visits to large consuming states, Madhya Pradesh (MP), could not be organized by the field office and therefore is not reflected in the report.

The report therefore reflects the findings of field visits to three primary salt producing states, analysis of review of literature and informal discussions with donor agencies and Salt Department as well as my personal experience, as a project officer (Nutrition) with UNICEF, in the overall management of the USI programme in the large state of UP between 2000 and February 2007.

II Iodised Salt Consumption Scenario

Today in India, only 51.1% households consume salt with appropriate level of iodine¹ against the USI goal of > 90% consuming iodised salt. An analysis of iodised salt consumption pattern reveals the situation deteriorated between 1996 and 2002(Figure I). The consumption of appropriately iodised salt in 1996, assessed in 7 states, was reported to be 70% while only 11% consumed salt with nil iodine². Unfortunately, it appears that between 1996 to 1998, with the discontinuation of the institutionalized monitoring system linked to primary health care system in north or north eastern states, there was a significant drop in the usage of appropriately iodised salt in a period of two years. In 1998-99, only 49% of salt was reported to have the appropriate recommended level of iodine of minimum 15 ppm while 28% salt had nil iodine³. The situation regarding consumption of iodised salt worsened in 2002--2003 and large states such as Uttar Pradesh reported less than 5% population consuming appropriately iodised salt⁵.

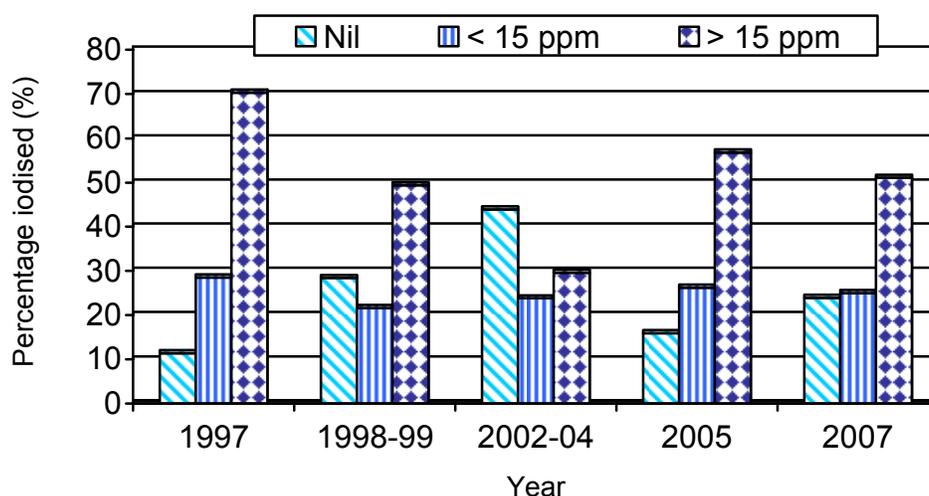


Figure I: Trends in Consumption of Iodised salt (1996-2007)¹⁻⁵

Efforts to intensify USI activities in 2002-3 by UNICEF and MI resulted in a remarkable increase in consumption of iodised salt in 2005 with about 50% population consuming iodised salt⁴⁻⁵. The recent National Health and Family Survey (NFHS) of 2005-06¹ further support this finding. The national survey indicates that 76.1% salt consumed is fortified with iodine but only 51.1 % households consume salt with the recommended level of iodine of minimum 15 ppm. About one fourth (23.9%) percent population is consuming salt with nil iodine---this is a population group remaining unprotected and is in fact large in terms of number of persons.

As per the criteria for achievement of sustainable elimination of IDD, the proportion of household using iodised salt should be over 90%. The NFHS data reveals that only one of the 29 states--Manipur--has been found to have 93.8% population consuming iodised salt with over 15ppm of iodine. The situation of iodised salt consumption continues to better in urban areas as compared to rural. Population consuming salt with nil iodine is 12.8% in urban areas compared to 29.3% in rural areas. Similarly, a higher percentage (71.5%) of urban compared to rural (41.2%) households consumes iodised salt with recommended 15

ppm of iodine. Figure II presents national level consumption of iodised salt in rural and urban regions.

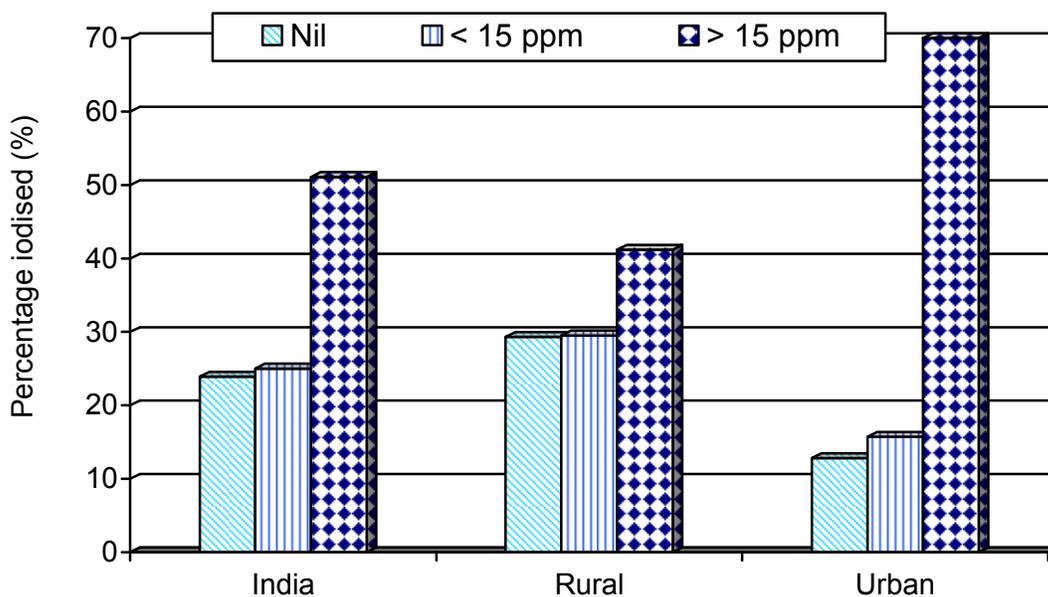


Figure II: Consumption of Iodised salt in Rural and Urban Areas (2005-2006)¹

An analysis of consumption of iodised salt (Figure III) indicates a wide difference amongst states¹. The situation in 8 northern-eastern states (Sikkim, Mizoram, Meghalaya, Nagaland, Tripura, Arunachal Pradesh, Manipur and Assam), West Bengal, Bihar and Jharkhand is remarkably better than the national average. The two primary contributory factors appear to be the existing “nominee system” for procurement of salt for north east and West Bengal as well as the fact that salt to these far off regions of north east, and states such as Jammu and Kashmir, Bihar moves primarily by rail and not road.

Transport of salt by road, to a great extent, influences the scope of entry of nil iodine in a state since there are often no mechanisms for testing iodine levels in salt at the entry point or in the marketing network. As per the data of the Salt Department, there is a significant increase in movement of edible salt by road since it is cost effective ----- 58% moves by rail and 42% by road. As per the Government of India (GoI) policy, the Salt Department is expected to check iodine levels in salt prior to allocation of rail rakes. On the other hand, salt moving by road is not checked for iodine levels and this encourages a number of trade practices which adversely influences USI goal. In fact, the road movement of salt is continuously increasing and could be higher than what is recorded since complete information on edible salt moving by road is not available with the Salt Department.

Primary reasons for the shift to road movement is related to the high cost of transport by rail to regions within limited kilometres as well as the fact that iodised salt producers find it difficult to follow the current policy of “complete rail rake loading” (comprising 40 wagons and 250 tons) against the earlier policy of “piece meal loading” for moving salt by rail. In fact, the existing policy that salt moving by road is not checked by any established system makes the choice of transport by road more attractive to salt

distributors or traders. Iodised salt availability at various states therefore needs to be viewed in terms of percentage of estimated salt moving by rail and / or road.

The recent state-wise data of iodised salt consumption (Figure III) demonstrates a correlation of poorer consumption of iodised salt and usage of road transport. It may be noted that transport of salt within the salt producing states is solely by road and there is no system to check iodine levels in salt prior to reaching consumers. In all the three primary salt producing states (Gujarat, Tamil Nadu, Rajasthan), over 25% salt consumed had nil iodine (Figure III). Six other states (Haryana, Madhya Pradesh, Maharashtra, Andhra Pradesh and Karnataka) where salt primarily moves by road, also reported high percentage of population of over 25% consuming salt with nil iodine. The correlation of road movement and iodised salt consumption was not evident in only 4 states -- Delhi, Punjab, Himachal Pradesh and Kerala. These four states despite receiving a high percentage of edible salt by road movement had over 70% population consuming iodised salt with over 15ppm of iodine. The significantly better situation of these four states could be attributed to high literacy and better economic situation which possibly results in higher demand for packaged powdered salt. In three of these 4 states, 90% men respondents of the NFHS survey were literate and possibly preferred packaged white powdered iodised salt. The chances of packaged powdered salt having nil iodine are comparatively lower than those observed for openly sold crystal or powdered salt.

A comparative analysis of salt in various states in 1997-98 and 2005-06 (Table I) indicates that there is no uniformity in the shift in pattern of consumption in various states regarding consumption of edible salt with nil iodine or with required level of 15 ppm iodine.

Following programme issues emerge from the analysis of the consumption data:

- The national ban on sale of non-iodised salt notified on 17th May 2006 is not being implemented in a systematic way. Field visits revealed that iodised salt producers were aware of the ban. However, the information was not disseminated to state based wholesalers procuring salt or health department which is expected to monitor the implementation of the ban. Additionally, the guideline issued for monitoring the ban enforcement is not known to programme officer of the government.
- Iodised salt consumption is poorer in states which are salt producing as well as in those states where salt is transported cost-effectively by road. As per the GoI policy, iodine levels in salt are checked by the Salt Department at the rail loading centres for sanction of rail rakes and not when salt moves by road. The importance of having a monitoring mechanism in place at production as well as rail or road loading points is evident.
- Consumers ---about 80% ---are buying salt which has iodine but iodine levels in salt are below the recommended levels. Demand creation through communication activities or intensive social marketing for promoting consumption of iodised salt is important but does not appear to be the primary programme issue. Access and availability of edible salt with appropriate level of iodine is the primary problem at

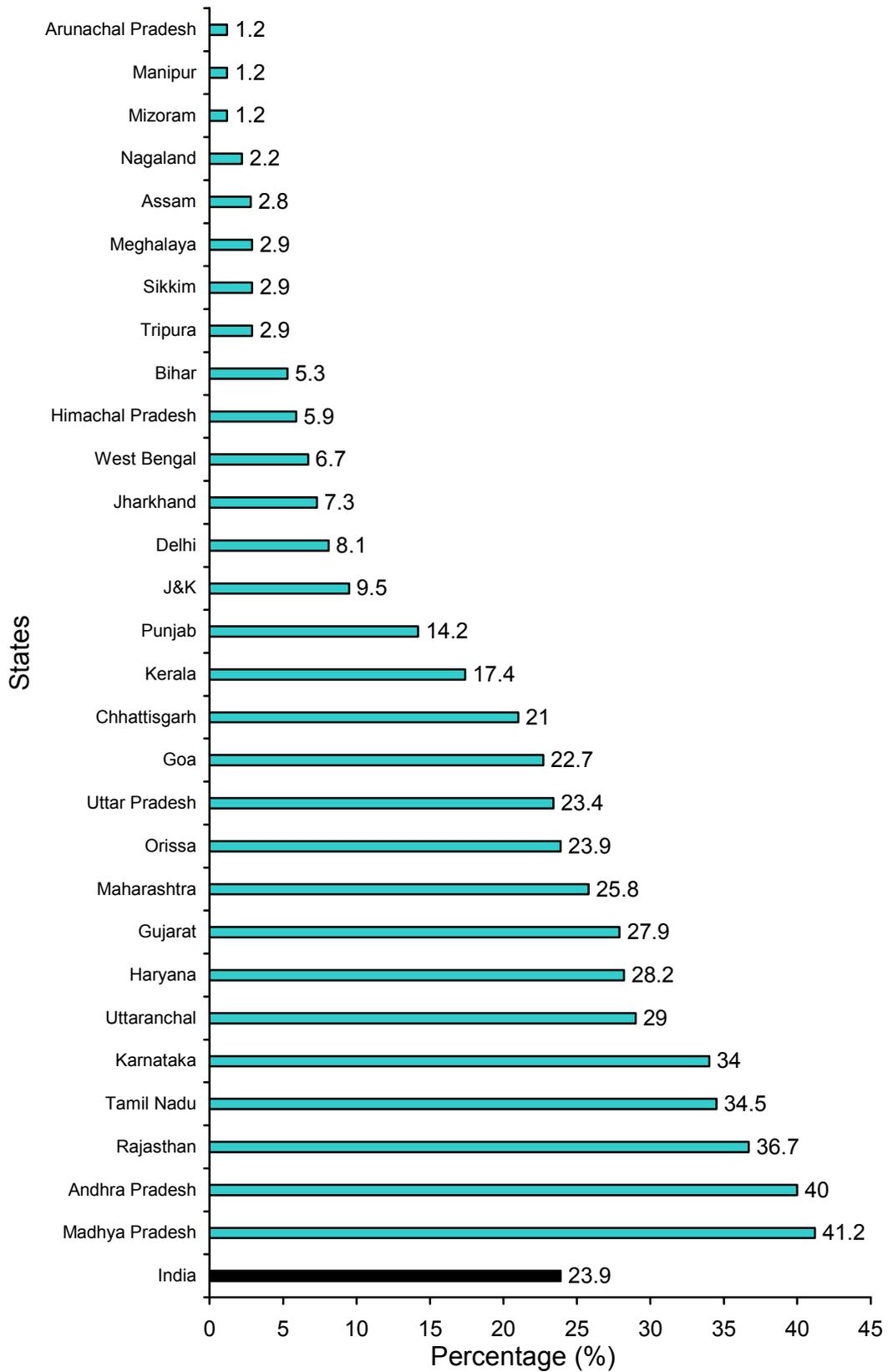


Figure VI: Consumption of Edible Salt with Nil Iodine – Statewise Profile¹

Table I: Statewise Profile of Consumption of Iodised Salt – Comparison in trends in last 10 years^{1,3}

State	Iodine Content of salt					
	None (0 ppm)		Inadequate (< 15 ppm)		Adequate (> 15 ppm)	
	NFHS II (1998-99)	NFHS III (2005-06)	NFHS II (1998-99)	NFHS III (2005-06)	NFHS II (1998-99)	NFHS III (2005-06)
Andhra Pradesh	36.8	40.0	35.7	29.0	27.4	31.0
Arunachal Pradesh	0.8	1.2	15.0	15.2	84.1	83.6
Assam	1.8	2.8	18.2	25.4	76.9	71.8
Bihar	22.9	5.3	30.1	28.6	47.0	66.1
Chhattisgarh	-	21.0	-	24.1	-	54.9
Delhi	6.1	8.1	4.5	5.9	82.9	86.0
Goa	37.3	22.7	20.2	12.5	77.9	64.8
Gujarat	29.5	27.9	14.2	16.4	56.1	55.7
Haryana	19.5	28.2	9.2	16.5	71.0	55.3
Himachal Pradesh	3.2	5.9	6.2	11.6	90.5	82.5
Jammu and Kashmir	24.8	9.5	22.3	14.7	52.9	75.8
Jharkhand	-	7.3	-	39.1	-	53.6
Karnataka	24.1	34.0	32.4	22.7	43.4	43.3
Kerala	47.6	17.4	13.2	8.7	39.3	73.9
Madhya Pradesh	25.0	41.2	16.3	22.4	56.7	36.3
Maharashtra	32.0	25.8	6.9	13.3	60.1	61.0
Manipur	2.3	1.2	9.7	5.0	87.9	93.8
Meghalaya	6.7	2.9	30.0	15.2	63.0	81.9
Mizoram	0.7	1.2	8.0	12.9	91.2	85.9
Nagaland	10.9	2.2	21.2	14.5	67.2	83.3
Orissa	29.6	23.9	35.1	36.5	35.0	39.6
Punjab	16.7	14.2	7.8	11.2	75.3	74.6
Rajasthan	37.1	36.7	15.3	22.5	46.3	40.8
Sikkim	3.1	2.9	17.5	18.8	79.1	78.3
Tamil Nadu	62.7	34.5	15.8	24.2	21.2	41.3
Tripura	-	2.9	-	21.7	-	75.5
Uttaranchal	-	29.0	-	25.1	-	45.9
Uttar Pradesh	22.7	23.4	26.9	40.2	48.8	36.4
West Bengal	11.3	6.7	26.5	24.2	61.8	69.1
India	28.4	23.9	21.6	25.0	49.4	51.1

consumption level. Consumers are not equipped with information, tools or skills to look for or assess iodine levels in salt. They are therefore not in a position to differentiate or identify or purchase salt has adequate level of iodine of over 15 ppm. Consumers commonly purchase salt which states “iodised” or simply purchase packed powdered salt. Consumers therefore buy the edible salt that is available. Unfortunately, marketed products very often do not have > 15 ppm recommended level of iodine. Wholesalers and retailers of salt therefore need to be sensitized and be equipped with information for measuring iodine levels in salt. Promotion of powdered packed iodised salt is also critical and wholesalers of salt producing and non salt producing states play a crucial role.

- 20% of edible salt that is marketed does not have any iodine while about one third or 30% has inadequate level of iodine. This is the situation of iodised salt consumption despite the fact that the country has the technical capacity to produce adequate quantity of edible iodised salt with the required recommended levels of iodine. The issue, to a great extent, appears to be a lack of commitment by producers to incorporate correct amount of potassium iodate for cost saving and business benefits. The fact that there is no established system to check iodine levels during production or during transport or marketing results in edible salt with nil or lower than the prescribed levels of iodine entering the market. Lack of monitoring system results in malpractices which disrupts not only the marketing scenario but adversely influences the production of iodised salt .The emerging data highlights the importance of monitoring iodine levels in salt not only at the production level but at wholesalers, retailers and consumption level.

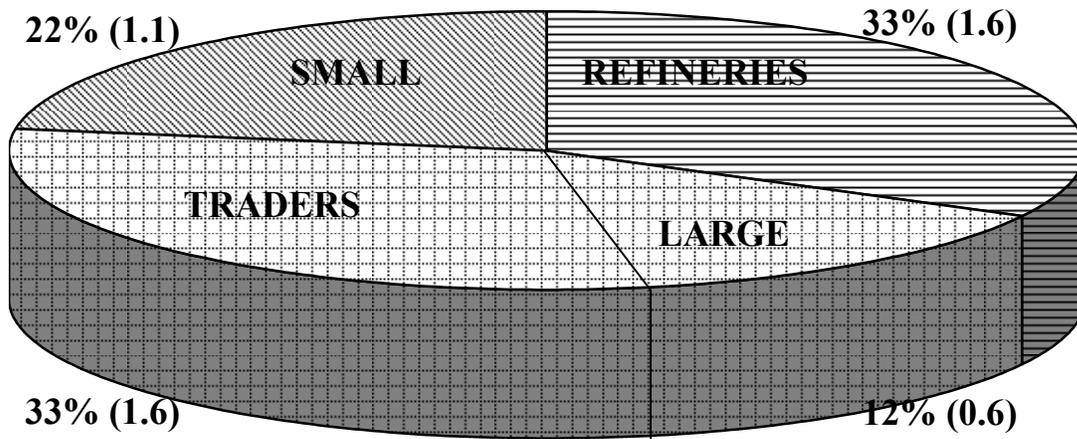
III Iodised Salt Production – An Overview

(i) Overall Iodised Salt Production

There are 13054 salt manufacturers engaged in production of common salt⁶. Based on total land under harvesting, it is estimated that 90% are small salt producers while 4.5% are medium and 5.5% are large producers of salt. Total annual salt production in the country is 16.5 MMT (million metric tonnes)--Gujarat producing 75% --followed by Tamil Nadu (13%) and Rajasthan (8%).On an average, 63% of the salt production is with big and medium producers while 34.5% by small producers of salt. Of the total salt produced, 5.4 million MMT is estimated to be for edible purposes and 8.0 MMT for industrial consumption. Annually, India exports average 2.51 MMT of salt.

Salt iodisation units are established by either primary common salt producers or non-salt producers termed as “traders”. Earlier iodisation units were set up by persons other than common salt manufacturers. However, this policy was discontinued since 1990s.

Salt Department reports that there are a total of 807 registered salt units of iodisation with a capacity to produce 11.6 MMT of iodised salt against the requirement of 5.4 MMT. Of these 807 iodisation units, 285 are with traders (Figure IV). A total of 480 salt iodisation



Type of Iodisation Units - Small primary salt producers - < 10 acres, Large primary salt producers -

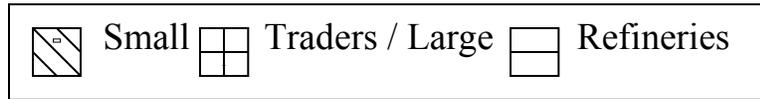


Figure IV: Production of Iodised Salt (MMT) by Type of Iodisation Units (in MMT)
(Total Production: 4.9 MMT)⁶

units belong to primary salt producers -- 376 referred as small (with less than 10 acres of land for salt harvesting) and 104 large (with over 10 acres of land for salt harvesting). In addition, there are 42 refineries (with a capacity of 3.76 MMT).

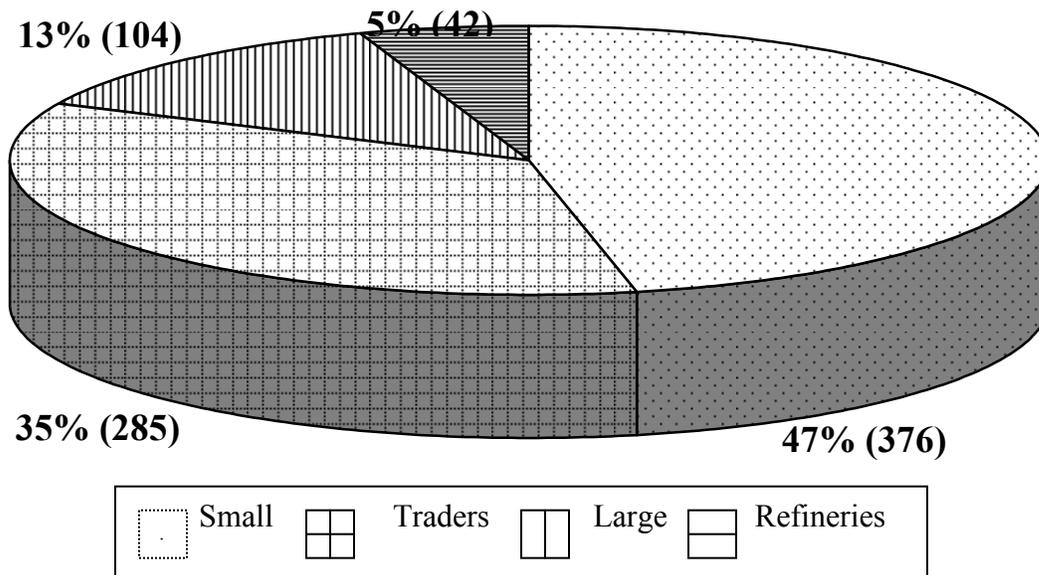


Figure V: Profile of Salt Iodisation Units (in number) by Classification of Units
(Total 807 units)⁶

Regarding production of iodised salt by various types of salt producers / refineries, it is estimated that 33% of iodised salt is produced by traders, 12% by large producers, 22% by small producers and 33% by refineries (Figure V).

Iodised salt production in India has increased since 1990 - there was 46 % increase in iodised salt production between 1992 to 1995. Between 1995-2007, iodised salt production increased to 4.9 MMT against the requirement of edible salt of 5.4 MMT (Figure VI). Of the total amount of iodised salt produced, 4.64 MMT is reported to be used within India ^{6,7}.

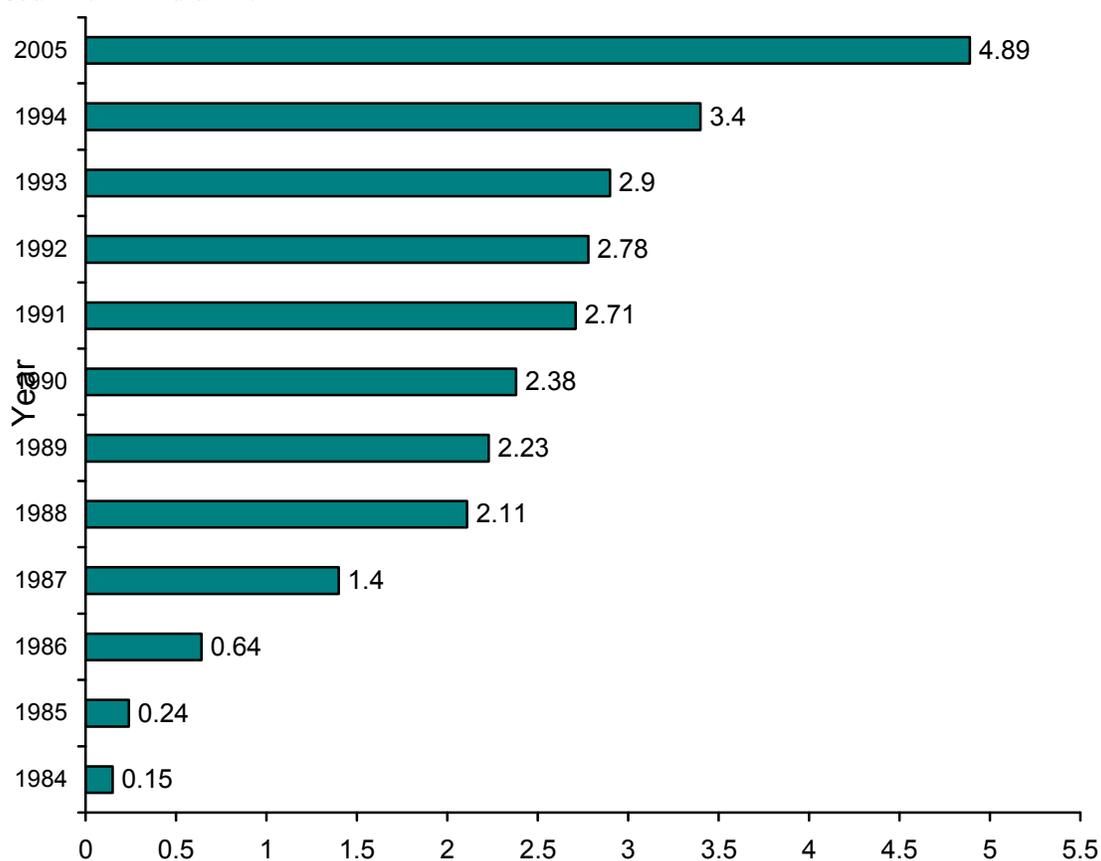


Figure VI Trends in Production of Iodised Salt (MT) (1984-2007)^{6,7}

(ii) Iodised Salt Production by various types of Producers

The Salt department has not categorized iodisation units with reference to capacity level of production. It is critical that classification of iodisation units by the Salt department is based on actual production or production capacity and not on the basis of acres of land for salt harvesting.

In the following section, Refineries are referred as “big” iodisation units. Iodisation units, having a capacity to produce maximum 5-7 metric tons or less of iodised salt per day are referred as “mini” and rest as “medium” iodisation units. It may be noted, as

referred above, that the Salt Department has not adapted these classifications of iodizing salt units.

(a) Refined Iodised Salt or Big Producers -- There is an increase in market demand for free flowing iodised salt by consumers. Refined iodised salt is cent percent appropriately iodised since reducing the amount of potassium iodate is of no economic benefit to owners of refineries. A continuous increase in the production of refined salt has been reported in the past decade. In 1995, India produced only 0.24 MMT of refined iodised salt while in 2005, the production of refined iodised salt increased to 1.6 MMT. Today about 42 refineries are in operation in India and have a total capacity to produce 3.76 MMT of iodised salt against the total edible salt requirement of 5.4 MMT of iodised salt. Therefore the current capacity of refineries is as high as 69.6 % of the total requirement of edible salt. Despite this, refined iodised salt produced in 2005 was only about 1.6 MMT i.e. only 32.3% of the total 4.89 MMT of iodised salt produced. The vast gap between capacity and production of refined salt appears to be narrowing rapidly and it is estimated that the trend in production of refined iodised salt will continue to rise with the acceleration in demand for “powdered, refined, packaged” iodised salt.

Refined iodised salt and non refined iodised salt have similar appearance when these are packed in retail packs of 1 kilogram. Refined iodised salt of known brands, such as Tata are viewed as the “good” example to be copied by non – refined or medium size producers. Non transparent polythene is often used for packaging non refined salt , especially when salt is not as white as refined salt. Availability of non-refined iodised salt at lower costs in attractive packages competes in market with refined iodised salt. Both products appear the same to consumers who is thus inclined to buy the brands of powdered packed salt available at lower costs. This results in higher demand and purchase of non – refined salt which is often not appropriately iodised or has no iodine. The medium non – refined salt producers therefore compete with refined salt by having the same appearance but a lower selling cost.

It is of interest to note that in the past few years, there has been a significant rise in demand for refined salt not only for edible purposes but also for industry. Textile and chemical industries require best quality common salt and this has resulted in an increase in demand of refined common salt by industry. Refineries are increasingly getting into the business of providing refined common salt of high grade to industry. This is found profitable by refineries since refined salt for industrial purpose is sold at about Rs 6.50 / kg. Moreover, there is the attraction of being free of pressure of legal issues pertaining to the PFA (Prevention of Food Adulteration Act) as well as of the malpractices associated with “checking” and “legal action”. There is therefore an increased interest of refineries to produce refined salt for industrial purpose.

(b) Non-Refined Iodised Salt / Medium and Mini Producers --This category includes 765 primary salt producers and traders who have not set up refineries. These iodisation units need to be viewed in the two following separate categories for actions ---medium and mini units. .

b1) Medium size Iodised Salt Producers--these are units operated by producers and traders who are producing over 5 - 7 tons salt per day or over 2700 tons annually. The

approved technology of iodisation such as spray mixing process, drip feed process and dry mixing methods are used. The producers normally have correct technical knowledge for iodisation but very often do not have intentions to incorporate correct levels of potassium iodate due to business interest. This is the group producing non-refined iodised salt at a lower cost. Cost saving is done by incorporating less iodine or following incorrect trade practices of labeling non – iodised product as appropriately iodised, imitating the designs of known refined iodised salt brands etc. the practice of printing a very high MRP (maximum retail price). The producers and wholesalers consider high MRP printing as a good marketing strategy and smart business since according to them high MRP is viewed as good quality by customer. Often price of Tata Salt is viewed as the “cut off price” for pricing non-refined iodised powdered salt. This results in packaged powdered iodised salt being viewed as costly salt. Often, selling price is “reduced” by retailers to “bait” the consumer. In fact, these medium producers believe that “the only scope of cutting cost is by cutting on cost of potassium iodate since good packaging and high pricing is essential for smart marketing”.

There are some medium producers who fail to adhere to technical guidelines due to lack of resources to buy proper machines or to replace the machines which are old and not functioning correctly. Moreover, to save cost the approved technology of iodisation is modified. For example, in the “spray mixing process”, adequate prescribed pressure during iodisation process is not used since there is a tendency by iodisation units to save electricity and keep usage of electricity “within the approved industrial electricity horse power limits”. Similarly, in the “drip feed process”, appropriate mixing is often not being undertaken and often the screw conveyor is missing and mixing is done by use of rotating mixture fixed within the hopper.

Therefore, the medium size iodised salt producers are possibly therefore the major contributors of packaged powdered edible salt with low levels of iodine. These producers often have an economic and business advantage of incorporating inadequate or nil iodine since they are confident that consumers will continue to buy their product which is marketed in attractive packages with iodised salt label at a lower cost than refined iodised salt. Moreover, the consumers are not in a position to know the level of iodine since there is no effective mechanism to in place to enforce the law or inform consumers of the quality of iodised salt.

With increase in shift to transport of salt by road rather than by rail, there is no checking of iodine levels in edible salt at any point of supply-marketing - consumption chain (salt moving by rail is, however, expected to be checked by the salt department for allocation of rail rakes) resulting in malpractices. Dealing with this segment of medium size iodised salt producers is the challenge for achieving and sustaining the USI goal. These medium iodised salt producers, unlike the mini producers, market the products not only locally but at a national level.

It was observed that within these medium salt producers exists an interesting group of “aggregated small salt producers” – the various small producers being members of the same family. These family members join together and operate as larger production units to make the business cost-effective and manageable. However, they are recorded as “small producers” with < 10 acres of land. These producers are therefore not registered or

monitored by the Salt Department. The practice of “aggregated small producers” is rather common, especially if the salt producers are involved in production as well as trade of iodizing salt. This helps the small salt producers to increase the harvesting land acreage area without having an obligation to register their salt units with the Salt Dept. These units, therefore, on record remain land owners of less than 10 acres or “small producers”. With increased demand for free flow iodised salt, such small producers who are in fact “medium size iodised salt producers” could be provided technical support to shift to automated big refinery units or technical support for improving production quality of with reduced production cost despite adequate usage of KIO_3 iodised salt.

b2) Mini Iodised Salt Producers ---There are about 376 mini iodised salt producers i.e. small producers of salt and traders who have mini iodisation units--i.e. daily production of iodised salt is not more than 7 tons per day or 2700 tons per year. These mini iodised producers use low cost techniques --low cost technology used for iodisation is “pile hand spray” and “chakkie method”---and market it directly in the neighbouring districts. However, a majority of these mini producers, market iodised salt by linking up with national level iodised salt distributors as well as traders who have a established network. A large number sell salt labeled as “iodised” even when salt has not been fortified with iodine.

“Hand Spray” is a low cost crude method of iodisation and involves spraying of potassium iodate solution on a heap of 10-20 kg salt using a hand sprayer (costing about Rs 950), followed by manually mixing it. This is more common in Tuticorin, Tamil Nadu. During field visits, on testing iodine levels in salt, (stored or freshly produced) using testing kits, all samples tested were found to have iodine in the prescribed limit of minimum 30ppm. The advantages and disadvantages of using this technology needs to be studied against the other approved methods where the technique of spraying and mixing in actual practices is not being correctly used during iodisation process for saving production cost.

The “Chakki method” of iodisation, practiced in Gujarat, is very unique---salt is filled in carrying pans by the labourers. On the top layer of salt, a dry mixture of potassium iodate is sprinkled by labourers. Following this, labourers off load salt in a hopper and liquid potassium iodate, in a regulated flow from a drip, is allowed to drop on salt. Salt is thus iodised at two stages and is then ground to fine powder by passing through a traditional stone chakkie operated by a motor. Ground iodised salt is filled into polythene packs and sealed manually --salt is not weighed while packing. The cost of production is Rs 0.92-95 paise per kg. Using salt testing kits, iodine levels are at times checked. “Chakki” salt is sold in local neighbouring district markets at Rs 2.00 per kg. Currently, such iodisation units are labour dependent and could close down if the labour problem continues to increase---- as noted in Tamil Nadu.

The mini iodised salt producers often have very limited resources. At times, the land for harvesting is not in one place but scattered .These mini producers neither have the resources nor the interest to form cooperatives since their primary interest is to retain the land for salt harvesting in their names. As far as USI goal is concerned, they play an important role in supplying iodised salt to villages situated in their neighbourhood districts. Support to mini producers for improving iodised salt consumption in salt

producing states is therefore crucial. All mini producers should be mapped (as being done by UNICEF, Gandhinagar) along with wholesalers / distributors. It is important to ensure that only iodised salt is tested and procured by them.

The mini iodisation units, including “hand spray” and chakkies, are primary suppliers in local state level marketing and do not appear to have serious implications in the national scenario. With the mission to achieve and sustain USI goal, our support to these mini producers should be in terms of motivating to incorporate correct level of iodine, technical support for correct usage of techniques as well as support for monitoring levels of iodine during process of production and marketing. Additionally, technical support to mini producers for producing better quality of common salt and linking them to refineries or industries.

In the current market scenario of iodised salt, any external donor support in terms of potassium iodate or sophisticated machine to these mini producers will possibly only delay the imminent closing of the business of mini producers to iodise and sell iodised salt since labour cost is continuously escalating. These producers are shrewd business persons who work with very limited resources and have recognized the constraints emerging due to labour problem. They therefore, realize the importance of diverting their business interest beyond salt (especially noted in Tamil Nadu) since they cannot retain labourers as well they note a shift in the market scenario to refined free flow salt. In fact, mini salt producers and traders in Tamil Nadu are in the process of exploring other alternatives, including concentrating primarily on harvesting and functioning as mere supplier of common salt to refineries, medium size producers as well industries who require common salt. In the current scenario, we need to help them to shift to production and harvesting of high quality common salt with a higher yield which could be then supplied to refineries for industrial purposes.

Recent plans of WFP-MI to form society of self help groups (SHGs) to iodise and market iodised salt through the members of these SHGs need to be studied with reference to its value in achieving and sustaining the USI goal. In the current scenario where demand for iodised salt is gradually shifting to white powdered iodised salt or free flow iodised salt, the contribution of the SHG based strategy needs to be critically studied. Further, the strategy needs to be examined in the context of observed dependency of small salt producers for marketing their products through the market established by iodised salt traders.

(c) Production and supply of big crystal “bargara salt” Bargara salt production and supply remains a major problem---about 22% of edible iodised salt produced in India continues to be the bargara variety. It may be noted bargara salt is produced only in the Runn of Kutch region of Gujarat where salinity of water favours production of only big crystal or bargara salt. The technology to shift to production of “poda” or smaller whiter variety of crystal salt is today well known to bargara salt producers. However, the bargara salt producers (33.7% of total iodised salt in Gujarat) are reluctant to adopt the new technology since there is a loss of 20-25% in the total production of salt. Moreover, bargara salt cannot be crushed into powder and stored since once powdered, hard lump of salt is formed within a few weeks and cannot be marketed or used.

In this situation, bargara salt producers of Gujarat continue to sell bargara salt as big crystals to UP and MP.

Interestingly, the bargara salt producers are continued to be provided with subsidized rail rakes since as per the PFA Act norms. Bargara salt once iodised is allowed to be loaded in rail rakes. Unfortunately, very often bargara salt is inadequately iodised. Moreover, salt is transported in big gunny bags of 50 kg and sold loose at a rather low cost compared to packaged refined or non refined iodised salt. Bargara salt is therefore often purchased by poor families at a very low cost of about Rs 2 per kg compared to Rs 5-7 per kg for non-refined packaged salt. Conditions of storage and marketing of bargara salt are often very unhygienic. Consumers therefore wash crystals of salt and dry it in sun prior to use. This results in loss of iodine since salt is coated with iodine merely on the top surface of big crystals. During washing, iodine gets dissolved in water and these results in loss of iodine. Families residing in remote areas of the two large states, Uttar Pradesh (UP) and Madhya Pradesh (MP) are thus deprived of iodine.

According to the Director, Central Salt and Marine Chemical Research Institute (CSMCRI), crushing and packing bargara salt in powdered form is feasible and the technology can be made available by CSMCRI. This needs to be explored.

(d) Iodised Salt Produced / Marketed by Government Owned Units Iodised salt is also produced or marketed by government owned units. These were visited in two states - Rajasthan and Tamil Nadu. In these states, the major government owned units are Sambhar Salts (produces and markets iodised salt) and TNSC or Tamil Nadu Salt Corporation (markets iodised salt). These government owned producing and marketing units get substantial support from various donors. It is important that only support to these units is linked to assurance to production and sale of salt with appropriate level of iodine.

Iodised salt by these government owned units is sold at a subsidized or low rate to consumers. These government owned units are also the main suppliers for the public distribution system (PDS) or the other government programmes such as the mid day meals (MDM) or Integrated Child Development Services (ICDS). Thus these units aim to reach the disadvantaged section of the population. However, there is no system in place to ensure that only quality iodised salt is procured and supplied. During the field visits, it was noted that iodised salt being procured by TNSC from selected Societies or producers had inadequate level of iodine. Salt quality and iodine levels therefore must be checked by the government units at production levels prior to procurement.

(iii) Quality and Availability of fortificant Potassium Iodate

Potassium iodate is produced and supplied in India by 14 of the 18 listed potassium iodate manufacturing units. Most of the manufacturers are located in Gujarat and Mumbai. In 2005, of the total 0.27million kg of potassium iodate was supplied within India by 14 potassium iodate producers, nearly 50% was supplied by a single unit based at Mumbai. India, also, remains an exporter of potassium iodate. Total export by two manufacturing units is about one fourth of the total supply within India---about 69,750kg. There appears to be a gradual loss of interest in the potassium iodate business

which possibly may result in monopoly by one large producer of potassium iodate. This was evident in Tamil Nadu. Since 2005, there is no potassium iodate supplier based at Tamil Nadu since the business was closed down by two earlier suppliers who did not find the business lucrative. Today, iodised salt producers of Tamil Nadu purchase potassium iodate from Gujarat or Mumbai.

Following are some of the emerging issues regarding procurement and quality of potassium iodate.

- Fluctuating international price as well as, monopoly of selected traders has adversely affected potassium iodate business. Current price of potassium iodate is quoted as Rs 1050 per kg. The cost was about Rs 600 per kg about 6 years back. Iodised salt producers and traders continuously requested for support for control on potassium iodate cost and not allowing it to escalate.
- Since 2005, potassium iodate is being supplied free to selected iodisation units by some donors. The criteria for selection and exit policy of this free supply of potassium iodate was not known or clear to producers or the staff of the Salt Department. Free supply of potassium iodate by MI (ICCIDD?) was noted to be viewed as a problem and not as a support by producers of iodised salt. During the field visits, it was evident that of free supply of potassium iodate had created ruffle amongst iodised salt producers in each of the three salt producing states. It appeared that there was no involvement of stakeholders in zeroing on the criteria for the selection of beneficiaries regarding provision of free supply of potassium iodate. Salt department staff and the various local associations of salt producers, traders as well as salt extenders expressed their concern regarding free supply of potassium iodate and its adverse impact on business environment of producers. Moreover, there were reports regarding misuse of the potassium iodate received as free supply – potassium iodate was sold or diluted for usage.

Supply of free potassium iodate and its implications need to be systematically studied by MI -UNICEF in consultation with the stakeholders. The issue of free supply of potassium iodate should be urgently addressed and given a high priority. Measures must be taken either to discontinue or make the whole process transparent. Support could be explored to be given --with an exit policy--to only those iodisation units that are linked with the public distribution system (PDS). However, it is important that external financing is viewed as a temporary support to boost production and in no way should create expectation or dependency on donors. An exit policy and plan for developing capacity is critical to avoid any major problems amongst the iodised salt producers.

(iv) Monitoring Iodine Levels at production level

In all the three salt producing states, monitoring of iodine levels during the production process was either non – existent or was done primarily by using rapid salt testing kits (STKs). Use of testing kits for assessing iodine levels at the production level was common. In its absence, there was no other method being used to assess iodine levels. Established laboratories were only seen in the big refineries.

Supply of portable titration kits, (developed and produced by CSMCRI, Bhavnagar) by UNICEF to selected production units and training of nodal persons was found to be a desirable intervention. However, these portable titration kits supplied by UNICEF were found to be used by iodised salt producers in Gujarat and to some extent in Rajasthan but not in Tamil Nadu. The criteria used for supplying laboratory kits by UNICEF was known to iodised salt unit owners in Gujarat and Rajasthan where training had been conducted for usage of the supplied laboratory kits. In Tamil Nadu, the supply and usage laboratory kits were not undertaken systematically. Infact, kits had been supplied by UNICEF even to big refineries despite the fact that sophisticated laboratories for testing not only iodine levels but as well as the quality of common salt already existed.

In Gujarat, UNICEF support was focused on establishing monitoring mechanisms during the production process. In addition to laboratory kits, UNICEF (Gujarat) had provided technical and financial support for the production of “Monitoring Record Register”. The design and content had been approved by the Salt Department and were under print with support from UNICEF (Gandhinagar). Standard method used for recording helped in maintaining and supervising records. Usage of such registers by all producers is desirable.

Monitoring guidelines to be followed during the production process regarding sampling, frequency etc for checking iodine levels in salt were not known to iodise salt producers. It may be noted that the Salt department had in fact developed guidelines in mid 1990s⁸. This needs to be revived and disseminated by the Salt Department so that the refineries and all the other iodisation units have a standardized system to adhere to. This will discourage the current ad hoc method used for sampling salt for testing iodine levels and will facilitate in establishing a system for monitoring.

(v) Production Level - Placement of Extenders / Salt Shakers

UNICEF supported extenders (3 each in Gujarat, Tamil Nadu and Rajasthan) provided guidance in production of quality of iodine in salt by motivating producers to mainstream titration method of checking iodine levels in the production process. Moreover, they also gave training to identify laboratory persons in titration method. The tasks of these extenders were well defined in Gujarat and Rajasthan but not in Tamil Nadu. The tasks of extenders are critical for meeting the USI goal. Their roles also need to be reviewed and should primarily include monitoring iodine levels and in facilitating production of iodised salt with appropriate quality.

(vi) External Technical Support to Producers

Salt producers are dependant solely on Salt Department and external donor support for technical advice. The “Central Salt and Marine Chemical Research Institute” (CSMCRI) Bhavnagar, Gujarat is a government owned institute based in the largest salt producing region of the country. The institute has a salt unit which has not been involved in the “USI Programme”. In fact, the institute was not aware of a number of technical issues which need to be addressed for achieving and sustaining the USI goal. It is critical that the scope of using the services of this institute for the USI Programme is reviewed and efforts made to involve them in the USI efforts. Linking the institute with various

societies of salt producers is also critical with reference to sustainability of the IDD Programme. Moreover, CSMCRI could be supported to establish a unit for giving external monitoring support.

IV Major Challenges

Towards achieving the USI Goal, we therefore need to concentrate on the following major challenges:

- Advocacy for ensuring high political priority to USI and establishment of a mechanism to ensure enforcement of national legal measure i.e. the ban on sale of non iodised salt for edible purposes.
 - Ensure government support, leadership and commitment to strategic planning and acceleration of USI goal towards elimination of IDD by ensuring mechanisms in place for enforcement of the national legal measures issued on 17th May 2006.
- Technical support and development of technical capacity of medium and mini producers to support production and Distribution of edible salt only with the recommended prescribed level of iodine.
 - Map of iodised salt producers with details on production, mode of transport (rail or road) and status of monitoring system. Such an exercise was attempted in 1996-97 by the Salt Department and the National Industrial Corporation, with UNICEF support. This needs to be reviewed and computerized.
 - Conduct a technical review of iodised salt production .Support to iodised salt producers to resolve any technical problems in production, especially to medium size producers of iodised salt. Support in reducing production cost.
 - Establish capacity of a national institute for technical and monitoring support.
- Establishment of a monitoring system at production, distribution (transport by rail or road), marketing (wholesalers, retailers) and consumption level.
 - Expand the monitoring systems beyond salt producers and develop and implement a comprehensive monitoring system comprising producers, wholesalers and retailers.
 - Support producers/traders to establish a practical and cost effective mechanism to monitor iodine levels in salt. In this context, revisiting and modifying roles and responsibilities of Salt Department to monitor iodine levels during production process as well as while loading for rail or road transport. Shifting the current focus of Salt Department from monitoring

only edible salt moving by rail transport (pertaining to allocation of rakes) to monitoring iodine levels in edible salt moving by rail as well as road. Support to computerize the monitoring system.

- Establishment of external monitoring institutions e.g. CSMCRI at production level and state based home science or medical college at marketing/or consumption level.
 - Continuing external monitoring support through placement of salt extenders by donor agencies/UNICEF. Appointing salt extenders for a defined period who help and support in the establishment of an effective monitoring system. The establishment plan for monitoring system also includes the exit plans of the extenders.
- Creating demand for not only iodised salt but for edible salt with appropriate level of iodine.
 - Demand creation for iodised salt not limited to only IEC activities but simultaneously ensuring access to iodised salt.
 - Streamlining USI and IDD messages into the health education messages of the NRHM (National Rural Health Mission) as well as integrating IDD / USI messages with the mid day meal programmes of schools ICDS and formal education system.

V Proposed Actions - Policy, Production, Marketing and Consumption levels

Based on the above analysis, following actions are proposed at various levels in the chain of iodised salt production and consumption level (Figure VII). Additionally, specific actions are proposed for monitoring at every level i.e. production, transport and distribution as well as at wholesalers and consumers level.

A. Actions--Policy Level

Advocacy efforts need to focus on the following actions for ensuring government commitment and leadership at central government as well as state government level.

- Sensitisation of politicians and policy makers regarding USI goal. This would involve holding meetings with parliamentary committee of health regarding the implications of iodine deficiency on national development as well as sharing the information on progress made, including success stories as well as efforts required for achieving and sustaining the goal of USI. A set of advocacy materials could be developed and shared with MPs and MLAs as well as nodal teaching institutes of public health, home science colleges and selected NGOs.
- Ensuring enforcement of the national legislation i.e. the national ban-prohibiting sale of non-iodised salt with less than 15ppm for edible purposes. This requires

ACCELERATING and SUSTAINING USI - PROPOSED ACTIONS

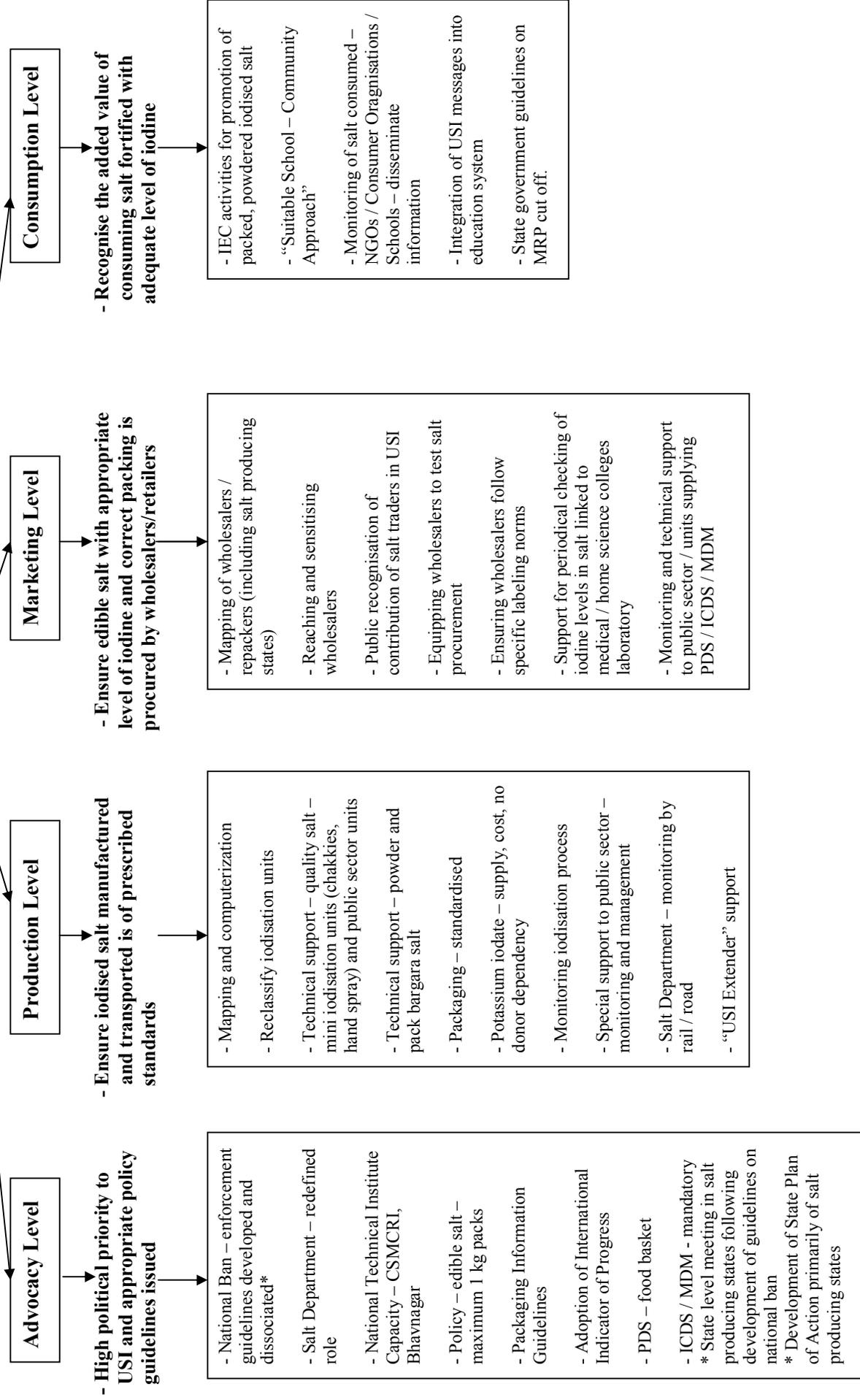


Figure VII: Accelerating and sustaining USI – Proposed Actions

development, printing and dissemination of information to facilitate actions on enforcement of the ban. The details of rules, instructions and standards with clear roles and responsibilities for selected institutions should be spelt out in the booklet. Additionally, a system for efficient feedback mechanism should be developed and implemented to help in the enforcement of the legislation. *(As per the current PFA Policy, state governments are not vested with powers under the Act, 1954, to issue statewide ban notification. It may be noted that Prevention of Food Adulteration Act (PFA) is therefore no more a state subject and therefore a state level notification is not essential.)*

- Advocating for inclusion of iodised salt as one of the food items to be sold under the public distribution system (PDS) by the state governments. PDS supply to include low cost non-refined iodised salt --price defined by the state government. Not desirable to subsidize the cost of the product since such support is often not sustainable. Moreover, subsidy on the product is not required if the producers are motivated to lower margins of profit for assured business through the PDS and other government programmes.
- Ensuring policy guidelines issued at the state level making it mandatory that only “iodised salt” is used in the Mid Day Meal (MDM) and Integrated Child Development Services (ICDS) programme.
- Ensuring that an elaborate comprehensive monitoring mechanism is developed and officially approved and established. Monitoring system not only to be limited to production level but also linked to distribution (wholesalers) and market level (retail). Moreover, efficient feedback and adjustment mechanism is built into monitoring system.
- Formulating policy to make it mandatory to sell iodised salt for edible purposes only in one kg or less packs.
- Issuing packaging guidelines by the Ministry of Industry for salt supplied for non-edible industrial usage.
- Standardizing the message on IDD that will be made mandatory to be printed by the iodised salt manufacturers or repackers.
- Preventing/controlling escalation in price of potassium iodate and discouraging free supply of potassium iodate in the absence of transparency or an exit policy.
- Redefining the role of Department of Salt in monitoring and USI programme. Strengthening the capacity of the Salt Department in monitoring iodine levels in salt, irrespective of mode of transport is by rail or road.
- Identifying and supporting a national institute for external monitoring.

- Donors/external financing institutions come together as a group with a comprehensive plan to support USI programme and with defined exit policy. A mechanism, such as the national alliance on IDD, could be established.
- Advocating for adoption by GoI of the set of indicators of progress developed by ICCIDD/UNICEF/WHO, which allows monitoring the progress and indicating achievement of sustainable elimination of IDD through USI⁸.

B. Actions – Production Level

Universal salt iodisation for IDD elimination is not a temporary responsibility of this generation but will remain a need for the society for years to come. The challenge is to maintain the momentum by institutionalizing a system for continuous production and supply of iodised salt with the minimum prescribed levels of iodine.

The field visit observations to the three major salt producing regions, Gujarat, Tamil Nadu and Rajasthan highlight the fact that for achieving the USI goal, increased programme focus needs to be directed for ensuring that the level of iodine in salt produced and marketed meet the agreed standards. The role-played by salt producer, ---big refined salt producers as well as the medium and small iodised salt producers (including traders) is critical towards achieving the USI goal. Situations observed at field level and actions to support USI are presented below.

- USI programme is one of the best examples of private public people partnership in development sector. We need to recognize the role of private sector in India. Achieving and sustaining USI goal must be perceived by the policy makers and salt producers as the basic responsibility of the private industry of salt. Reaching and working with various formal groups of societies of salt producers is therefore critical. In India, managers of salt industry are often aware of the technical requirement of salt iodization and are also well informed of the existing norms and systems for procuring fortificant and equipment. However, there needs to be a full commitment by each and every iodised salt producer in achieving and sustaining the USI goal. It is important to change their “mind set”. Mechanisms need to be built into USI programme to enhance their participation by publicly recognizing their contribution in “protecting young minds of the country.”
- Mapping of Iodised Salt Producers is critical for planning and monitoring progress. Mapping of iodised salt (not salt) traders and producers and computerization of data was initiated in 1995 by Salt Department and Ministry of Industry with UNICEF support. The status of this needs to be reviewed. Support could be given for updating the information in a computerized form since such a database will facilitate in planning. Moreover, it is important that the data is based on reclassification of iodisation units in terms of production and not in terms of acreage of land for harvesting salt to facilitate programme actions for USI.
- Recategorisation of Salt Iodisation Units of both producers and traders by total production output and not on the basis of acreage of land belonging to a producer for undertaking harvesting of salt. Moreover, simplifying the definition of “producers of

iodised salt” by bringing together all producers and traders of iodised salt. This will imply that all producers of iodised salt will be treated as one group, irrespective of whether the iodised salt producers also harvest or manufacture common salt.

- Technical support to “aggregated small producers” or “medium size iodised salt producers” for the formation of cooperatives and for establishing units for producing refined salt. The scope of linking up medium units with existing established refineries should also be explored. Moreover, technical support also could be given in the management of production of iodised salt at a lower cost i.e. adopting practices for reducing cost in lifting iodised salt, iodisation production technology, packaging etc.
- Support to medium producer in production of common salt of higher grade is critical.
- Mini iodised salt producers are under a lot of pressure due to change in market scenario as well as due to inavailability of labour. Mini iodised salt producers and medium sized common salt harvesters need support for improving the quality grade of common salt harvested. Technical support for laying of polythene bed or salt bed for producing higher grade of salt could be given. Thus, the mini salt producers could be increasingly involved in production and supply of higher grade common salt for iodisation to medium units and refineries as well as to industries. Technical linkage could be explored to be established with the salt technology division of Central Salt and Marine Chemicals Research (CSMCRI) at Bhavnagar.
- Additionally, mini producers need support for improving on the various recognized technologies for iodisation - spray mixing process as well as drip feed method. Additional new methods have been adopted in the last 5-7 years for iodisation, such as “hand spray” and “chakkies” method. Mini iodised salt producers, such as chakkies of Gujarat or hand spray users of Tamil Nadu, need to be sensitized and given technical support for ensuring salt is appropriately iodised. The existing technologies are low cost and effort should be made to improve on these instead of totally discontinuing these. Moreover, laboratory support needs to be organized for those mini units to monitor iodine levels in the final product.
- “Bargara” or “big crystal” salt is about one third of the edible salt produced in Gujarat. Field discussions reveal that the bargara salt producers recognize that there is gradually a shift in demand for powdered iodised salt. Today, keeping their business interest in mind, they are interested to produce “poda variety” of salt and pack these in one Kg retail packs. Bargara salt producers need to be supported to adopt new technologies. Support should be a “conditional” technical support. The condition being that bargara salt producers either shift to production and transport of only “poda” variety or powder bargara salt or packaged these in one kg retail packs.
- Meeting of Bargara salt producers with the technical experts of Centre for Salt and Marine Chemical Research Institute (CSMCRI) Bhavnagar could be urgently organized to resolve technical issues. In this context, external donor support could be given to increase the capacity of CSMCRI and encourage the involvement of the institute in the USI.

- Support to producers in terms of free supply of potassium iodate is not recommended. Free supply of potassium iodate and quality of fortificant has resulted in a number of malpractices pertaining to sale and usage of the fortificant. Moreover, there is a lot of disturbance amongst producers due to a feeling of “being left out” from free supply and lack of involvement of stakeholders. Free supply is only a short-term measure and will possibly only delay the close of business of these “aggregated units” or “mini units” since these units would not be able to sustain production in the absence of getting potassium iodate free of cost.
- A system needs to be established for checking the quality of potassium iodate sold by the dealers. This task could be assigned to CSMCRI. A certificate could be given to potassium iodate dealers following approval of quality. This will help in reviving the confidence of the iodised salt producers in the quality of potassium iodate being made available.
- A comprehensive monitoring system needs to be established. Role of salt department in monitoring needs to be revisited. This is presented in detail in the section on monitoring. Establishment of an effective monitoring system is critical to ensure only iodised salt with 30ppm of iodine is produced and moved by rail or road. Moreover, salt moving by road is not checked for iodine levels by salt Department since this is considered outside the purview of the Salt Department. This policy needs to be reviewed and revised since timely testing will possibly reduce the continuous harassment of retailers at the consumption level. Following actions are proposed.
 - Monitoring guidelines, produced by Salt Department, should be updated and shared with all iodisation salt unit owners whether big, small or mini. This is of utmost importance since salt is iodised in most cases but not adequately iodised. Important to establish a system for regularly testing iodine levels in salt by using the titration method. However, it is important that the use of STK is not totally stopped but complemented with the systematic use of the titration method.
 - The scope of big refineries helping a nodal person from medium / mini iodisation units to get trained in their laboratories in titration technique was explored. This appeared feasible and a system could be developed for involving the refineries and giving them due credit for supporting for a social cause.
 - Provision and use by all iodisation units of standard monitoring record registers developed and produced by UNICEF (Gandhinagar) – these have already been approved by the salt Dept. The uniformity of recording data will help in checking and reporting.
 - Role of extenders to be reviewed in all three states. The placement of these extenders as well as the tasks needs to be revisited and defined. Extenders could be trained to focus primarily in monitoring and giving timely feedback for improving iodised salt production. A plan of action should be

developed for each of the region. Special attention could be given to develop a plan of action to test iodine levels in salt, which is being produced for supplying the PDS network or MDM (Mid Day Meal) programmes of various states. Establishing a system for extenders to have regular dialogues with various associations or societies of salt producers / traders as well as with the Salt Department staff would be beneficial. The extenders could be accordingly trained.

- In addition to production level, the comprehensive monitoring system developed at iodisation units should also include establishment of a monitoring system at wholesalers' level. Establishment of laboratories in medical colleges where wholesalers have access for checking iodine level could be explored. This is a low investment as demonstrated by UP state. The UP strategy could be reviewed and followed.
- **Packaging of Iodised salt** It is well known that unethical practices are followed regarding labeling and designing of salt packs. Mini iodised salt producers, often for reducing cost use the rejected printed packaging bags of various brands. Salt, even if not iodised is labeled “iodised”. Moreover, designs of well known refined iodised salt brands are copied by medium or mini producers who take advantage of the fact that consumers in their ignorance or being illiterate will purchase products by merely looking at the label of the well advertised brands.

Regarding packaging, there are problems not only at production units but at the wholesalers' levels in various states - in both salt producing and non – salt producing states. There is a well known business of “repackers” – these being traders who buy loose salt (iodised and non – iodised) and pack it in attractive packages using the above referred unethical practices

No solution to date has been found for checking the prevalent practice of incorrect information printed on packages. Besides strengthening monitoring, involvement of Ministry of Industry as well as Ministry of Consumer Affairs and Consumer organizations could be explored for the following actions.

- For non edible salt, directives for labeling need to be issued e.g. “Non-Iodised Salt only for Industrial Usage. Not for edible usage.”
- Smart packaging for edible iodised salt – “sun logo” could be made mandatory.
- Messages on implications of iodine deficiency could be standardized for all packs, irrespective of brands. This will help in reinforcing the correct messages on IDD and importance of using salt.
- Production of smaller packs of 500g or 250g of iodised salt could be explored. Availability of low cost packs will increase the chances of poor

people buying iodised salt. Poor people very often depend on daily wages to purchase food and to save cost bring smaller quantities of open salt.

- Marketing of open iodised salt should be discouraged. Sale in only one-kilo pack or less should be made universal. Additionally, marketing of packed iodised salt could be complemented by creating demand for packaged iodised salt at the consumption level and for introduction of packed iodised salt in the PDS system. A system needs to be in place to ensure appropriate checking of iodine levels prior to procurement for the large government system which procures iodised salt.

- **Price of Iodised Salt** The primary issue of marketing that needs to be addressed at the production level is the high maximum retail price (MRP) printed on the packs by mini and medium iodised producers, including government enterprise. This is done for mainly three reasons ---- (i) it is assumed that the quality will be perceived by consumers to be a superior quality (often the cut off price level of “Tata Salt” is used as a standard), (ii) profit margin of at least one Rs per kg is ensured to retailers with high MRP and (iii) wholesalers are also able to get a high margin of profit from iodised salt producers.

The printing of high MRP is detrimental to the efforts for achieving the USI goal. Printing of high price gives wrong message to the consumer who already perceives packed iodised salt as an expensive item which is beyond their means as compared to open iodised salt. The issue of printing very high MRP needs to be examined since we know that in actual practice, retailers normally sell the iodised salt at a cost 30-50% lower than what is printed. The pricing issue needs to be addressed by the concerned state government. At state level, directives could be issued by the state government regarding the price cutoff levels for MRPs on iodised salt packs sold within the state. Wholesalers of salt could also be sensitized to the implications of high MRP and discouraged to demand these from producers.

- **Transport and Movement of Iodised Salt** In the past two decades, there has been an increase in the usage of road transport for moving iodised salt. Today, it is estimated that 55% salt moves by rail and 45% by road. The producers / traders do not find it economically a great advantage to use rail due to (i) increase in cost (ii) loading of full rakes (iii) and the need to get “allocation quota” sanctioned by the Salt Department. Moreover, the zonal scheme for salt movement has also been relaxed resulting in traders / producers having a choice to select the destinations of trade. Selection of transport i.e. rail or road is based on the cost factor of movement to the selected destination.

Additionally, a special “nominee system” is being continued to be followed for 8 northeast states and West Bengal. Salt moves to these states primarily by rail but through a controlled nominee system. It appears from NFHS III data that monitoring of iodised salt procured by these states is better than in remaining part of the country. Salt Department could be assisted to further strengthen this system.

Despite an increase use of rail for salt movement, no system is in place to check iodised salt moving by road from production site to consuming destinations. Checking iodine levels in salt moving by road is outside the purview of the Salt Department. Advocacy with central and state government to issue and implement policy for checking iodine levels in salt being loaded in trucks at production level as well as for checking iodine levels in salt while unloading salt at consuming level is critical. Urgent action is required and such actions should be made part of a comprehensive monitoring system. In addition, network for monitoring iodine levels at unloading stations needs to be strengthened. Consumer organizations could be involved since these organizations are increasingly getting active in protecting consumer interest. State based organizations could be identified, sensitized and involved in the USI programme. This was successfully done in 1995-97 and also demonstrated to be effective in Tamil Nadu in the past 3-4 years.

- **Capacity Development of a National Technical Centre** A national institute, in addition to salt Department, needs to be developed. As stated in section III, the Central Salt and Marine Chemical Research Institute (CSMCRI) based at Bhavnagar, Gujarat could be developed as centre for research and development to support the USI programme.

C. Actions---Marketing Level

The proposed actions need to be reviewed keeping in mind the current status of iodised salt consumption in each state. According to NFHS III data presented in Figures, it is evident that north eastern states and West Bengal are the only states in India consuming over 75%of salt with at least 15ppm of iodine. These states are covered under a special “nominee” system and this possibly facilitates appropriate procurement of iodised salt. The consumption of iodised salt in EAG (Empowerment Action Groups) states (Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh and Uttaranchal) and salt producing states is rather poor. Over 30% households in EAG states except for Bihar and Chhattisgarh, consume salt with no iodine.

During the consultancy period, proposed visit to Madhya Pradesh (MP) was not organized and the problem of the state was therefore not specifically studied. The past experiences of checking salt supply at state entry level by rail or road reveals that adhoc exercise of checking is effective but only for a short period. Infact, there is danger of it resulting in malpractices unless it is made a part of a comprehensive monitoring system. Moreover, based on the experience of UP state, it is critical that wholesalers are recognized as very critical partners in marketing iodised salt and in the USI programme. Efforts should be directed to map and identify the wholesalers and reach them to sensitise them of their role in contributing to mental health and school performance of young children in their states and in the country.

The following actions are proposed to be undertaken in all states, with special focus on states where salt trade by road is continuously on an increase i.e. salt producing states and adjoining states as well as large northern states such as UP and MP.

- Mapping of Salt wholesalers as well as repackers in each state. Developing a directory of wholesalers with names, addresses or photographs. For example, UP state has mapped and shown that there are only about 350 wholesalers of salt. Therefore, there will be not more than 350 wholesalers in a state and this data can be easily computerized.
- Sensitising the wholesalers to continue with profit making and yet shift to only iodised salt. Assisting them in their business interest as well as social issues.
- Equipping the wholesalers to test levels of iodine in salt purchased by regular use of salt testing kits as well as by linking with an external laboratory for salt titration (such a laboratory can be established in selected medical or Home Science colleges of states). Also developing a system of easy access of STKs to wholesalers to purchase salt testing kits. MBI Chemicals, producers of STKs could be encouraged to link up with wholesalers.
- Encouraging sale of only powdered retail packaged iodised salt. – packs of 1 kg or less.
- Discouraging procurement and sale of open bargara or the big crystal salt. Informing them of implications of selling bargara salt.
- Involving consumer organizations or state based NGOs in the tasks of monitoring iodine levels in salt and disseminating information through newspapers and mass media (This was successfully done in UP and Tamil Nadu). Moreover, organizing annual or biannual meetings of wholesalers and media persons at district level for influencing trade practices. Dissemination of information to public of brands of salt tested and those which to have adequate iodine. Use of mass media as well as elementary high school child to community actions, has proved effective in influencing trade practices as done in Uttar Pradesh.
- Ensuring sale of iodised salt through the public distribution system (PDS) at a low cost and setting a mechanism to check iodine levels in edible salt distributed through the PDS.
- Involving and equipping food inspectors to check iodine levels in salt.

D. Actions --Consumption Level

Monitoring and creating demand for iodised salt in community is important for state governments. A comprehensive information, education and communication (IEC) strategy, combined with a system for monitoring iodised salt being sold through retailers needs to be established. The latter is important since iodisation of salt for edible purposes is mandatory and is not a voluntary choice of fortification of salt with iodine.

“School to Community” Approach has been successfully implemented in UP⁹ and it is recommended that these efforts are continued and launched in five other EAG states (Madhya Pradesh, Orissa, Rajasthan, Jharkhand, and Chhattisgarh) where less than 50% salt is reported to be appropriately iodised. In these EAG states, PSM Departments of medical colleges or non-government organizations (NGOs) with social marketing or management expertise, could be identified and assigned the task of creating demand for iodized salt as well as checking iodine levels of salt being sold by wholesalers / retailers. Provision of salt testing kits as well as information materials such as booklets, handbills and danglers are important and supportive tools for these tasks.

Following tasks in the “Child to Community Approach” have proved effective in the past.

- Promotion of packaged powdered iodised salt.
- Students oriented to the importance of iodine nutrition and taking the message to community. In UP⁹, children enrolled in middle schools and not primary schools were involved in IEC cum monitoring activities. The middle and high schools cover a wider geographical area – only 10-12 schools operate in each block, or per 100,000 populations, as compared to a very large number of 70-80 primary schools in a block. This implies that a larger population and retailer network would be reached through a smaller group of middle and high school children as compared to primary schools. The strategy in UP focused on reaching school children every 3-4 months and conducting a group exercise of collecting edible salt samples from 10 different households in their residential locality and bringing these samples to schools for testing. Additionally, school children participated in collecting and testing “all brands” of edible salt available in the market and testing these using salt testing kits in the presence of all children in school assemblies. Informing children of the specific iodized salt brands by names which have nil or low levels of iodine that must not be used. The intervention proved effective not only for influencing consumers but in altering retailers as well as wholesalers to buy salt with correct level of iodine.

E. Action - Monitoring

Process of production, programme intervention as well as impact must be monitored for sustained elimination of IDD. In the above two sections, reference has been made for strengthening monitoring system at production and consumption level. A well established monitoring system to monitor iodine levels in salt at production level during process of iodisation as well as at market / distribution and consumption levels is critical for achieving the USI goal and sustaining elimination of IDD. Today, 50% salt has low level of iodine or nil iodine. Production and sale of appropriately iodised salt is therefore of utmost importance. Following actions are proposed at various levels.

- Producers of Iodised Salt/ Iodisation Units As per the specific guidelines issued by the Salt Department, iodised salt manufacturers are expected to strictly adhere to the approved process of iodisation as well as have a laboratory attached to iodisation units which are , manned by a qualified chemist. “Stages of checking and recommended

precautions” have been issued by the Salt Department. Unfortunately, these are not known nor followed.

In order to strengthen monitoring of iodine level by producers, UNICEF could ensure supply of laboratory kits and organize training in iodine estimation by the titration method. In Gujarat, this activity was well planned and implemented. Additionally, standard registers were developed, printed and supported by UNICEF, Gujarat.

Checking of iodine levels by producers is a low priority of big, medium or mini iodisation units. Gaps continue to remain in the usage of laboratory kits supplied by UNICEF since there is no systematic supervision by Salt Department or State Governments or an external agency. Continuous sensitisation and support to producers of iodised salt is required. A plan of action needs to be developed for ensuring a user friendly system.

- Salt Department, under the Ministry of Industry, has the following three responsibilities with reference to iodised salt production and universal salt iodisation (USI).
 - Nodal agency for monitoring production, distribution and quality control of iodised salt.
 - Technological development on salt iodisation.
 - Coordination and execution of activities related to universal salt iodisation programme.

Salt department is headed by the Salt Commissioner and has 5 regional offices located at Chennai, Ahmedabad, Mumbai, Jaipur and Calcutta. All except Calcutta is headed by a deputy Salt Commissioner. In addition, Salt Department has 100 field offices. There are 26 laboratories attached to the Salt department and in addition there are three mobile laboratories operationalised in 1996 with UNICEF support. Details of monitoring by Salt Department is presented in the booklet of the Salt Department entitled” Monitoring System at Production Level--Universal Salt Iodization--India, August,1996”¹⁰. This current system in operation needs to be critically reviewed and redesigned including computerization for timely feedback etc for ensuring USI goal is reached and sustained.

- USI Extenders It would be useful to position UNICEF or other donor supported “USI Extenders” present in all the salt producing areas with a view to support in the establishment of a monitoring system at production level. The exit policy of extenders must be clearly defined to ensure that it is only a temporary arrangement and does not create dependency on donor support.
- Monitoring System at Marketing and Consumption Levels should complement the monitoring system at production level. Reference to these is made in the two preceding sections - “Actions at Marketing Level” and “Actions at Consumption Level”. All wholesalers should have access to rapid salt testing kits (STKs) despite the fact that it is a qualitative tool. They should be trained to use STKs for acid /

alkaline salt. Instructions for use of salt testing kits should be corrected and simplified, especially with reference to alkaline salt or red cap solutions.

- Wholesalers in each state should also have access to facilities to get the procured salt periodically tested by state based laboratories. It is proposed that in each state home science or medical colleges are equipped with laboratory facility for checking iodine levels in salt using the titration method. One medical or home science college could be made responsible to provide services to 25 percent of wholesaler of the state. Wholesalers and retailers should have access to such a facility for the next five years or till a good reliable monitoring system is established at the production level and there is a policy in place to check iodine levels in salt moving by road as well as rail.

ANNEXURE I

DETAILED REPORTS OF FIELD VISITS UNDERTAKEN

- **Field visit to Gujarat – Kharagoda, Gandhidham and Bhavnagar**
- **Field visit to Rajasthan**
- **Field visit to Tamil Nadu – Chennai and Tuticorin**

Field visit to Gujarat

- **Kharagoda, Gandhidham**
- **Bhavnagar**

FIELD TRIP REPORT, Gujarat
28th May'07 – 1st June'07

Sheila Vir
Consultant, UNICEF

I Purpose

The purpose of the field visit to UNICEF, Gandhinagar and Salt works of Gujarat was as follows:

1. Discuss and understand UNICEF Gujarat office support to increase the production and supply of iodised salt.
2. Undertake field visits to Salt works with a view to understand and analyse the current iodised salt production and distribution scenario. With reference to measures to be taken for influencing USI goal I.
3. Support in resolving emerging issues of supply of iodised salt to states of Uttar Pradesh, Madhya Pradesh and other states receiving supply from Gujarat.

II Activities Undertaken The report presents details of visits with reference to observations, discussions, analysis of issues and follow up actions required to accelerate the USI.

A. Meeting with UNICEF (Gandhinagar)

28th May'07: Discussion was held with UNICEF Gujarat office (Dr. Y.N. Mathur and Ms. Poorvi Karkar). Following support has been provided by UNICEF in the last ten months:

1. Three UNICEF supported extenders, based at Surendra Nagar for Kharagoda region (Mr. Ranjan Jha), Kutch district (Mr. Vaibhav) for the Gandhidham region and Bhavnagar district (Ms. Anjali) for Saurashtra region.
2. Titration kit at production level - 20 iodisation units in 2006 and 40 units planned for 2007. These kits are designed by Marine Research Institute and cost about Rs 6000 / kit. Supervisors of these units (one laboratory shared by 2 – 3).
3. Mapping of small “chakki” units of iodisation and sharing of data with MI extenders. Extenders for facilitating free supply of iodine.
4. Development and distribution, printing of registers for recording iodine level at salt iodisation unit level.
5. Communication support for creating demand for iodised salt.
6. Advocacy with salt producers and state government to produce and sell only quality salt

Following the discussion field visits plans to Inland and Gandhidham region was finalized for 29th May 07 to 1st June 07. A brief summary of field visit is presented.

B. Meeting with iodised salt Producers / traders of Salt / Inland Areas – 29th and 30th May'07

Inland areas of salt comprise Kharagoda, Navalaky, Malviya, Vavanija, Halvad, Dhrangadhara, Santhalpur and Adesa. Three meetings were held with about salt iodisation traders of Kharagoda, Dhrangadhara, Halvad and Santhalpur regions, Ms. Ranjan Jha (UNICEF, IDD extender) and Ms Poorvi Karkar (CDN Consultant, UNICEF, Gujarat) were present.

At Kharagoda, met with the President of the Kharagoda Salt Association (Mr. Higul Bhai; contact – 9426215558/ 02758 – 228258), Mr. Jiten Ajani (ICCIDD – MI Extender) and Salt department officers (Mr. Rabaria and Mr. Ved Prakash). At Halvad, Mr. Babu Lal Bhai Pancholi (President of Halvad Salt Association) and MI Extender (Mr. Kashyap Dave) was present. In Santhalpur district, met with the traders and Babu Bhai, President of Santhalpur Salt Association and Mr. D.B. Goyal, Deputy Superintendent Salt Department Kharagoda produces and supplies only salt phoda. Annexure I present details of persons met. Following is a summary of the discussions:

(a) **Production of “bargara” salt** has been discontinued. Bargara salt production technique has been altered to make it whiter in colour and smaller in size. The new product is known as phoda salt. Kharagoda has cent percent trade of phoda salt. Phoda salt uses the technology of using the laying of salt bed prior to “charging” for crystallization. This results in production of salt crystals which are whiter than bargara as well as smaller in size. Cost of phoda is Rs 70 / quintal as compared to Rs 60 / quintal of bargara salt. The corners of phoda crystals are not as sharp as bargara salt. These can be packed in high density polythene bags – unlike bargara.

(b) **Demand for crystal phoda salt** is continuously decreasing. Uttar Pradesh and Madhya Pradesh wholesalers demand less of phoda than before. These traders were aware that consumers were being advised under the state IDD programme to use powdered packaged salt and use phoda only for feeding animals. Traders queried the rationale of this shift.

Following my discussion, these traders agreed that phoda salt being transported in 50 kilogram bags were often sold in open and in very unhygienic situation. This often resulted in washing of phoda salt and sun drying it before being used by consumers; iodine on superficial surface got washed off resulting in loss of iodine at consumption level.

(c) Most of salt from **Inland area is distributed to Madhya Pradesh and Uttar Pradesh** – 50 percent by rail and 50 percent by road. Salt to Madhya Pradesh is moved primarily by road. Iodised salt movement by road is not checked at loading level. Poorly iodised salt or non iodised salt therefore tends to move by road to Madhya Pradesh.

(d) Regarding the rail movement, the problem of **sudden release and availability of rail rakes** remains a major problem. According to traders, this results in increasing production to an extent beyond the existing capacity of iodisation units. Often this adversely affects quality of iodisation. Since in order to fill all the 40 wagons of the rake, the producers outsource the iodised salt production to various units without a system for checking iodine content.

(e) **MI and ICCIDD support is for supplying crushers and potassium iodate.** About 29 traders were supplied with crushers by MI; the crushers are electrically or diesel operated. The production is expected to commence from September 07. Additionally MI is also supplying KIO_3 to Association of “chakki traders” based at Baroda and Ahmedabad and to iodisation units in Kharagoda and Halvad regions. MI supply of KIO_3 is procured from Calibre Chemicals in one kilogram packs. MI supplies 33 percent of KIO_3 required while the owners of iodisation units themselves procure 66 percent of KIO_3 . The exit policy of MI support is not very clear to MI extenders or salt iodisation producers. In addition to the supply support, MI undertakes random checking of iodine levels at loading stations. Cost of KIO_3 procured by MI is Rs.1014 / kilogram. The feedback of representatives of the trade associations revealed that Inland Iodisation traders in fact have the resources to procure KIO_3 . The associations were unhappy that a few selected units are supplied KIO_3 free of cost. Those not receiving supply of KIO_3 are concerned and a free supply of KIO_3 has resulted in causing disharmony among the traders. Since the business and benefit margins are influenced substantially by free supply of KIO_3 .

(f) The traders expressed concern regarding the **actions taken for stopping road and rail supply of phoda salt at the borders of Madhya Pradesh.** The traders informed me of two incidents. The first one related to stopping of salt rail rakes since the salt on testing by the testing kits (STKs) indicated that iodine content was only 9 ppm. These rakes were released since titration indicated 19 ppm and not 9 ppm iodine. The traders complained that STKs should not be used for testing iodine levels when such serious actions were being taken. The traders are correct in supporting only the titration method since this is legally accepted. On the other hand, it is difficult to believe the differences reported by traders for specific rake when the estimation was done by STK and titration. It may be noted that STK does not give results as specific as 9 ppm.

The second rake, according to traders, was stopped since the iodised salt packs had no label indicating that salt being transported was for industrial use. According to traders Madhya Pradesh State considers labelling for industrial salt as mandatory but these traders have no information that salt packs should specifically print information regarding industrial supply. Separate follow up discussion with representative Salt Department confirmed that no such guidelines to date have been received by them. No guidelines on industrial usage. (SV to follow with the Salt Commission office).

(g) The producers were also informed of the IDD programme strategy in the consuming states of Uttar Pradesh and Madhya Pradesh. This was considered critical to indicate the link of USI programme at production level with consumption level. It was evident from the discussion that producers needed to be continuously sensitized to their role in “protecting the minds” of young children. Salt producers were informed that in fact the USI strategy at state level protect their business interest since demand for iodised salt is continuously created.

(h) The problem of phoda salt was discussed. The traders were informed that in Uttar Pradesh a special effort is being made by government with UNICEF support to promote packaged powdered iodised salt. This was considered critical since bargara / phoda salt is often sold in open and is washed prior to use. This washes of the iodine and is of little use in protecting population, especially newborns from IDD. Use of 1 kilogram polythene package therefore is desirable since it will discourage washing of crystals at consumption level. The traders were congratulated for their efforts in making a breakthrough in production of whiter phoda crystals and shifting the 50 kilogram packaging to polythene lined gunny bags. It was stressed that in the current programme scenario phoda salt trade would be reduced significantly unless 1 kilogram packaging was introduced. The salt producers were informed that wholesalers were in fact packing / crushing and packing phoda salt at wholesalers' level in the consuming state Uttar Pradesh. However, this was limited to only 3 – 5 percent of supply. The advantages of producing 1 kilogram pack, despite the additional cost of packaging, will facilitate in protecting trade of phoda salt. The traders were receptive to the idea and agreed to explore the implication of packaging and selling only 1 kilogram phoda salt pack.

The following two issues **were of primary concern** to salt iodisation traders

- (i) regarding iodised salt movement by road and associated problems in Madhya Pradesh, the salt producers requested for a meeting to be organized with wholesalers of Indore. Early holding of the meeting was requested.
- (ii) The traders were extremely concerned and complained of the poor quality of Rajasthan salt (in terms of poor NaCl content of less than 96 percent and poor iodine). According to them, Rajasthan produces big crystal variety of salt and very often the supply of these crystals is mistakenly presumed to be from Gujarat Inland salt. The iodised salt producers therefore requested UNICEF to follow up on increasing trade of poor quality of Rajasthan salt with the Salt Department. It was felt that Salt Department should strictly monitor quality of Rajasthan salt produced, irrespective of whether moving by rail or road.

C. Salt Plants Visited In Inland Region – 29th and 30th May'07

Following three salt units were visited:

- (a) GIDC Salt Plant, Halvad (29 / 5)
- (b) Sahi Baba Unit of Salt, Halvad (29 / 5)
- (c) Mahavir Salt Chakki, Pathan (30 / 5)

Following points emerged from the discussion at the production site:

1. **Titration kit and training** in titration was useful and being followed.
2. Records indicated that minimum **iodine level at production level** was between 20 – 30 ppm. This was unfortunately accepted as normal by producers and extenders. It was felt by all that this is adequate to meet the demand of 15 ppm at consumption level. However, we should note that < 30 ppm is the minimum level legally acceptable and we must encourage adhering to the PFA norms.

3. Production units including chakki units are **routinely monitored** by UNICEF extenders for ensuring level of iodine. Special attention is given to ensure appropriate monitoring by titration method is undertaken and records maintained in the registers.
4. Some **chakki units** are in operation in Inland salt regions. The units simply crush bargara salt and iodise it. The chakki salt is sold only in the neighbouring areas and the sale is completed in 4 months. This is critical to avoid forming of lumps. Production capacity is 5 tons per day. The chakki salt is sold to retailers at Rs. 1.20 / kilogram or Rs 1200 / ton. Cost of iodisation is rather high i.e. 5.25 paise per kilogram. The “chakkiwala” purchases KIO_3 every 4 – 8 days. Per day cost of KIO_3 is Rs 260 / day as against the total sale of Rs 6000 / day i.e. 4.3% is the cost of iodisation. Iodine level is checked by salt testing kit and not by titration. The chakkiwala processed titration kit, which was acquired a few years back. The discussion revealed that chakkiwalas were interested in using the titration method.

Following is a summary of issues to be followed up by SV:

1. Follow up with salt department on policy regarding labeling / identification for industrial salt usage. Any gazette notification? If so copy to be shared with iodised salt producers.
2. Follow up with Madhya Pradesh UNICEF office regarding the system for monitoring iodine level issues regarding legal action.
3. Sensitise traders on importance of iodine – beyond goiter.
4. Guidelines from salt department to all producers regarding
 - (i) standard adherence to 30 ppm minimum level of iodine.
 - (ii) standard message on implications of iodine to be printed on packages.

D. Field Visit to Iodisation Salt Plants in Gandhidham - 31st May and 1st June'07

Gandhidham has 100 registered iodisation units. Out of these 100 only about 40 – 45 are functioning. Of these 6 are refineries with washing plants and 9 are free flowing salt production refineries. Remaining 50 – 55 are mobile iodisation units. These are put in operation only in case of accelerating production to meet the supply of salt for filling the supplied rakes at a short notice.

Following briefing by the salt extender (Mr. Vaibhav), visited the following salt works:

1. Godavari Salt (with triple washing units) has capacity of 80 tons / day or 3 – 4 tons / hour. Met with the plant in charge Mr. Sunder Sharma and Mr. Narayan, Supervisor. Mr. Narayan has been trained by the extender as well as the visiting local chemist for undertaking titration. In my presence, Mr. Narayan very skillfully demonstrated titration of salt samples.
2. Alok Asram Unit – has 3 washing units and produces triple refined salt. Along with KIO_3 , potassium ferrocyanide is added.

3. Vineet Rahul Salt (No washing unit) – produces 100 tons per day. The unit was under repair.

E. Meetings at Gandhidham

The following three meetings were held:

1. Meeting with Dr. Kashyap, Assistant Salt Commissioner, Department of salt.
2. Meeting with MI – ICIDD, Salt Extender – Mr. Dinesh Thakkar.
3. Meeting with Mr. Heera Lal Parikh (President of All India Salt Association) and Mr. Bachhu Bhai (President, Inland Small Scale Salt Manufacturers Association).

Following is the summary of discussion:

1. Salt Department explained the zonal scheme. As per the current scheme, Gujarat now supplies salt to West Bengal and Assam. Earlier only Tamil Nadu salt was being supplied to West Bengal and North East.
2. Iodised salt, except refined salt, is supplied under category C of railways. Refined iodised salt moves under category D. and this is not monitored by salt department. Industrial salt also moves under category D with no control of salt department. Under D higher priority is accorded to refined iodised salt if there is a recommendation from the Salt Department.
3. Existence of guidelines regarding labeling of industrial salt is not known either to the Salt Department or to the producers or to the MI extenders. Salt department nor the Salt Associations were therefore not in agreement that any salt moving to Madhya Pradesh should be stopped, if the label does not indicate industrial salt (SV to follow up on guidelines with Salt Commission office).
4. All agreed that Salt Department should issue details on standard message that should be printed on polythene packs.
5. According to the Salt Department representative, Dr. Kashyap, no information regarding free KIO_3 supply has been shared by MI / ICCIDD. Salt Department in Gandhidham is concerned that supply of KIO_3 to some selected salt producers is creating ripples in the trade balance. MI, according to the salt department representative, should be transparent on criteria of selection of salt producers and also share the exit policy. This is possibly due to conflicts between big and small salt producers since small producer gets leverage on price and sets up a price competition at selling points. Contrary to the Salt Department's statement, MI representative confirmed, in a diplomatic discussion, that the salt department was well aware of the criteria and was fully involved in selection of producers for MI support for KIO_3 and crusher units.
6. MI also confirmed that 50% of KIO_3 required that was being given to chakki type iodised units (total estimated 250 chakki units) and to inland small producers with less than 20,000 tons (of phoda) per annum production. Exit policy is yet to be spelt out though support is only for 2 – 3 years.

7. Following discussion on advantages of packaging phoda salt, the MI representative also agreed to the suggestion that iodine used for phoda salt in fact would be wasted unless the practice of washing is discontinued at the consumption level. Mr. Thakkar agreed that MI should also advocate for 1 kilogram packs to be used for phoda salt so that iodine used for fortification is retained and used. This would be appropriate since MI gives support for KIO_3 and could use this as a tool for advocacy for 1 kilogram packs. It was also indicated to MI that we all need to adhere to Government of India's legal minimum cut of 30 ppm for iodisation. Criteria for support by MI to salt producers should give increased focus for maintaining minimum 30 ppm iodine level.
8. Following issues emerged from the discussion with the Salt Society Representatives:
 - Trade of packed salt has been continuously increasing. President of both the associations fully support iodised salt trade for edible purposes should be totally in the form of packaged salt – 1 kilogram or 500 grams. Phoda salt can be packed in 400 gauge polythene bags. Cost will increase by 50 paise and this should be accepted.
 - Strict monitoring should be in place for testing the quality of salt and iodine levels of salt produced in Nawa region and Sambhar lake regions of Rajasthan.
 - Supply of free iodine by MI – ICCIDD (30 – 50 percent supplied free) was creating a major problem in iodised salt trade prices, profit margins etc and this was creating a rift amongst traders as well as KIO_3 producers.
 - Iodised salt is supplied through the PDS network of Madhya Pradesh by Hindustan salt. This is non refined and non free flow salt.
 - Double fortified salt (DFS) production is being undertaken by Ankur Salt Industries for Himachal Pradesh (Rs 5.50 / kilogram to Rs6.75 / kilogram). Refined free flow salt is being fortified using the NIN formula as well as MI formula (Iron fortification is 1000 ppm and iodine is 30 ppm). In the MI formula, a premix is used and the black spots are visible in the pack – the cost is Rs 6.50 / kilogram. NIN formula product cost is RS 4.50 / kilogram. It may be noted that the Tamil Nadu salt Corporation produces DFS using MI formula. For shifting the production from iodised salt to DFS, only an additional mixer (cost about Rs 10 lakhs and a chemical (Ferrous Sulphate) is required.

III Follow Up Actions

Towards improving production and supply of iodised salt from Gujarat to consuming states following actions are proposed to be taken:

1. Monitoring to be further strengthened by extenders. Minimum iodine at production level should not be below 30 ppm – as per the legal PFA framework guidelines.
2. Sensitization and advocacy with phoda iodised salt producer to shift from 50 kilogram packs to 1 kilogram polythene packs.
3. Follow up with Salt Commissioner's office on :
 - (a) Industrial salt packing guidelines
 - (b) Standardization of messages to be printed on iodised salt packs
 - (c) Issue of guidelines to salt producers to follow PFA guidelines of 30 ppm iodine
4. Follow up with Madhya Pradesh office on guidelines being followed for checking road and rail movement. Review and ensure PFA guidelines for usage of titration method adhered to.
5. Propose to consuming states, especially Madhya Pradesh, to organize meeting of salt wholesalers with traders at Indore.
6. Analyse, through visits and discussions, implications of free supply of KIO_3 by MI. This will facilitate in informing UNICEF and in taking timely actions towards ensuring salt iodisation and production is not adversely affected due to free KIO_3 supply.

Trip Report --Bhavnagar, Gujarat, 25-29th September

The objective of the visit was to review the situation regarding production of iodised salt and to recommend actions for supporting efforts to iodise salt.

Persons Met ---UNICEF (Gandhinagar) --Dr Y.N. Mathur, Mr G.Gulati, Ms Poorvi and MS anjali Nigam, , Salt Department--Mr H.C.Pant, Superintendent, Mr Anurbindo Nag, Laboratory-incharge, H, Bhavnagar Salt--Mr Chetan Kamdar, Sagar Chakkuie--Mr Ghani Bhai, Mr Harshad Bhai, Savarian Salt., Dr Verma, Bhavnagar Medical college, Mr Anuj Parmat of Sanket Salt Industry, Dr M.R. Gandhi and Dr Mohan Das of Central salt And Marine Chemical research Institute.

Summary of Discussion and Observations

- 1) Bhavnagar Circle has about 45 salt harvesting units and 18 centres for production of iodised salt. Three big refineries (Nirma, Patel and Super Salt) produce 1, 35,574 MMT of salt while rest of the iodisation units produces only 16,378 MMT of iodised salt. Total iodised salt production is only about 10% of the total salt production of 14, 09,578 MMTs. Of the 18 iodisation units, only 6 have no salt harvesting units and buy salt. In the past five years, there has been three following changes in salt trade---i) increase in production of refined high grade variety of iodised salt ii) Higher production of fine grade of non-iodised common salt and iii) increase in transportation by road as compared to rail. These changes are critical with reference to USI goal since it has impact on production of quality iodised salt by small producers as well as on the establishment of a system to monitor iodine levels in salt. Discussion on these issues was held with small (chakki users), medium (using spray technique for the production of 5-6 MMT salt per day) and refinery unit persons.
- 2) Meeting with Bhavnagar Circle Salt Department. This circle office is the circle office of south Gujarat and is one of the five offices under the Jamnagar office where an Assistant Salt Commissioner is in-charge of these circles. I was informed that this year due to heavy rains, harvested stored salt have been washed off and the Salt Department is conducting a survey to assess the damage. In every circle office, there is an inspector who is responsible for monitoring salt production and collecting cess.

According to the Salt Dept, there are three types of primary iodised salt producers---chakkies of small producers, medium size iodisation units of traders and large by sal Only 4 iodisation units are registered with salt department and therefore monitoring of Salt department is limited to these 4 units and the rest are supervised at random. The monitoring van supplied by UNICEF in 1997-98 is used whenever funds are allocated for the driver and fuel.

The salt refinery production capacity is much higher than the current production. For example Nirma has a capacity of about 2 lakh tons against the current production of only 84,876 MMT. The Nirma group has 25,000 acres of land on lease from the government. There is therefore an ample capacity which remains untapped .It was clarified by the salt dept that there is no approval required by refineries for production. However, at the same time I was informed that during the registration with the Salt Department, the capacity is reviewed

and a “Permitted capacity” per annum is issued by the Salt Department along with registration. Refineries apply for enhancement of capacity which is reviewed and approved by the Salt Dept. Such a system in fact appears to introduce a “control” element by the Salt Dept in the production of salt by refineries.

There has been a remarkable increase in refined salt production in the Bhavnagar Circle ---in 2003,iodised salt production was 1.16 lakh metric tons against a total production of 2.15 lakh tons in 2006.The refined salt moves under category D of the rail rake. Movement of iodised salt is increasing by road as compared to rail. The Salt Dept was not aware of any guidelines regarding labeling of salt bags moving for industry and agreed that specific labeling may be helpful. Normally industrial salt moves in loose or in 50 kg bags with specification that it is vacuum salt.

The Salt dept officer confirmed that he had not seen any guidelines issued by the Salt Department for facilitating establishment of a system. Salt Office has issued instructions that the ratio of salt to potassium iodate should be 20 tons of common salt to one kg of potassium iodate. The salt dept confirmed that the purity of potassium iodate supplied to iodised salt producers is not checked and agreed to my suggestion that it would be helpful if the purity of KIO₃ is checked by the salt Dept to facilitate appropriate iodisation. Cost of potassium iodate is Rs 1000 to 1080 per kg .Cost of iodisation is 6-7 paise per kg.

I was informed by Dr Nigam Extender UNICEF, that in Gujarat state, there are food inspectors based at district level and are from the Dept of Food and Drugs, No inspector is possibly functioning under the health department and monitoring the PFA Act. The implementation of PFA act is therefore weak or possibly non-existent.

Bhavnagar Salt Manufacturers Association is neither registered nor active.

Salt produced in Bhavnagar has the concentration of 1.5-2 degrees while the desirable level for higher production is a concentration of 2.5-3 degrees.

Salt production or the monitoring data is not computerized .Circle office of the salt Department is not linked to the computer system of the HQ at Rajasthan and therefore the communication gaps remain in timely feedback and actions.

3) Visit to Bhavnagar Salt --Not a refinery. Production of salt is 1, 52,000 MMT and of this only 25,000 MMT is iodised. Most of the production is for industrial salt--reliance, Gujarat chemicals, Heavy chemicals, Caustic Soda etc. Edible iodised salt is supplied under the nominee system to West Bengal and Chattisgarh by rail. Mr Chetan Kamdar of the industry expressed concern about the cost of potassium iodate --cost of iodisation Rs 50 per ton (5kg of KIO₃ for 100 tons). I also discussed the need to bring down the PPM at production level to 20 ppm instead of 30 ppm since with good packing most of the potassium iodate is often retained.

4) Visit to Sagar Salt Chakki--Mr Ghani Bhai explained the process of iodisation. Common salt is harvested by this group and stored at the production site. Production is 800-900 MMT per year. The method of iodisation is very unique---salt is filled in carrying pans by the labourer. On the top layer dry mixture of potassium iodate is sprinkled .The salt with potassium iodate is off-loaded in a hopper which has liquid potassium iodate dropping on the

salt from a connected drip. The salt is thus iodised at two stages. The salt with iodine passes through a traditional stone chakkie operated by a motor. Ground salt is filled and sealed manually into 900 gm polythene packs--salt is not weighed while packing and therefore the label states 900 gm and not one Kg. The cost of production is Rs 0.92-95 paise per kg. Using STK, ppm was checked and was found to be over 30ppm. This salt is sold at Rs 2.00 per kg.

This unit head, Mr Ghani had received training in the titration technique but was not using the kit provided by UNICEF. He confessed that titration was rather difficult. STK was used for checking iodine levels. I was informed that the ICCIDD kit was giving higher intensity of blue colour even when the ppm level was on the lower side.

5) Patel Salt Works--Mr Vipin Bhai briefed us on the iodised salt production by his refinery. Mr Bhai has 4 salt works--two of these are in Bhavnagar. Total salt produced is 30,000 MMT and of this 50% is for edible purposes and iodised. Transports salt by road to Maharashtra and south Gujarat. Rake price has increased in the recent past by 250%. Salt is sold through a distributor based at Mumbai. Rs 1.30 is the cost at factory level while the MRP for half kg is Rs 2.00 and for one kg is Rs 5.00. According to Mr Bhai, local small producers very often do not adhere to the PFA norms since the only saving margin is by using less potassium iodate.

6) Mr Harshad Bhai, Savarian Salt - Informed that about 50,000MMT of salt washed off due to heavy rain this year, In fact, Savarian salt lost 8000MMT of salt this year. The annual production of salt harvested by this unit is 30,000MMT--7000-8000 is iodised and rest is sold for industrial purpose. With the introduction of system of loading full rake (A rake has 40 wagons ---60 MMT per box or wagon i.e. a total of 2400 MMT) and not the piecemeal wagon loading, there is a lot of discontent amongst producers regarding moving salt by rail. Two rakes are allocated per month but of the 2007 quota, only 2 rakes have been used in first six months of the year. The iodised salt producers therefore prefer to transport salt by road since there is no dependency on others as in the case of rake which have to be fully loaded.

I was also informed that a circular on the PFA act has been issued by the salt dept and is suppose to available on the website of the salt dept. The circular number is IAS/79/97/2035 of 22nd March 2007. This circular pertains to Food and Safety Standard Bill (details to be obtained). Agreed that all iodised edible salt should be marketed in one or half kg packs. Laboratory is installed for industrial salt for measuring Ca and Mg levels. It was therefore important to link iodine level assessment to labs being established for industry. This unit also indicated that the interest in the business of iodised salt was going down with the transport problem and demand for refined salt by industry.

7) Sanket Salt Industry--Mr Anuj A. Paramat--Technique used for iodisation is roller type with a sprayer attached for KIO₃ --total cost of machinery Rs 3.5 lakhs. Total production is 5-6 tons per day. Iodine level is tested using only STKs and titration method is not possible daily. Salt dept also checks iodine levels in salt.

According to Mr Anuj, the continuous rise in cost of potassium iodate has resulted in malpractices since the producer can only save in the total cost by reducing iodine levels, According to him, cost can only be reduced by decreasing iodine levels since salt cannot be adulterated for increasing weight and reducing cost. The trend to incorporate less iodine will

rise since the cost of KIO₃ is escalating since the last three years. Plastic bag rate has also increased from Rs 45 to Rs 85 per kg.

Salt is transported by road to wholesalers who market iodised salt. Road movement costs Rs 450 per ton. Agreed to my suggestion that effort is made to reach the wholesalers and equipping them with STKs to test iodine level. According to Mr Anuj, such a move would help in medium producers who market products with adequate level of iodine even if the cost was slightly higher than chakkies product or those produced by small producers. The small producers, according to him, were selling iodised salt at a lower price since they are saving on iodine cost but continued to enjoy the market benefits with wholesalers.

8) Meeting with Dr M.R.Gandhi, Deputy Director, Central Salt And Marine Chemicals Research Institute and Dr Mohan Das, Salt and Marine Chemical Research. Discussion was held on the programme and how to link the reach with USI Goa. Dr Gandhi has done immense research work on quality salt production, submersion technique of iodisation, model salt pans, improving the iodine compound for iodisation and shifting to a new product from potassium iodate (layered technology) for reducing cost and increasing iodine availability for iodisation. Discussion was held regarding reducing the size of crystal of bargara salt and improving its packaging. Thought it would be useful to meet bargara salt producers to provide technical support in crushing and packing. Mr Gandhi expressed the interest of the Institute in being associated with USI programme to solve field problems. The idea of testing KIO₃ purity was appealing and this needs to be followed. Dr Gandhi also suggested that the NaCl levels of chakki producers should be checked for NaCl levels since a high level of impurity will result in higher and rapid loss of iodine.

Conclusion--Monitoring by extender has contributed significantly in improving iodine levels in salt produced by small chakkies and medium producers. However, the contribution of these two groups is very low compared to refined salt. The salt extenders TOR needs to be reviewed to ensure continued monitoring with additional responsibility for establishing a district system for reaching wholesalers and School-community approach. Details were discussed with Gandhinagar office.

Following actions are proposed to be followed.

- 1) Revisit the TOR of extender since only 18 units to be visited per month. The extender could be effectively used for establishing a district plan of action for reaching community and retailers through the school children.
- 2) Wholesalers in salt producing districts as well as the entire state could be mapped and reached. Currently extenders are mapping the chakkies.
- 3) Meeting of Food and Drug Inspectors could be organized to sensitise them about USI and the role that could be effectively played by them in ensuring adequate iodine levels.
- 4) Advocacy to review the role of salt dept in monitoring iodised salt moving by rail as well as by road.
- 5) Mapping of all salt producers and iodisation units. Exploring involvement of the Salt Dept in monitoring levels of iodine in registered and unregistered. Mobility support to salt Dept to visit all units and in developing a system for feedback by computerization of circle offices.

- 6) Advocacy for making it mandatory to sell iodised salt in one kg packs.
- 7) Supporting in establishing a system for making STKs available in the market for wholesalers.
- 8) Organising a meeting of Central Salt and Marine Chemical Research Institute with Bargara salt producers regarding production of powdered iodised salt. Also follow up on checking quality of potassium iodate supplied and in being a part of the monitoring system.
- 9) Technical support by the Central Institute in checking and improving quality of salt produced by small producers.
- 10) State Government has yet to issue a notification on ban on sale of non-iodised salt for edible purpose. PFA is a state subject and the national ban has to be included under the PFA Act of the State government and a notification accordingly issued by the state government.
- 11) Usage of two types of STKs , MBI and ICCIDD , is causing confusion since intensity of colour produced by the ICCIDD kit is high even for below 15ppm samples.

Summary of Emerging Recommendations --Gujarat Iodised Salt Production

A. Gandhidham and Kharagoda Region

2. Monitoring to be further strengthened by extenders. Minimum iodine at production level should not be below 30 ppm – as per the legal PFA framework guidelines.
3. Sensitization and advocacy with phoda iodised salt producer to shift from 50 kilogram packs to 1 kilogram polythene packs.
4. Follow up with Salt Commissioner's office on :
 - Industrial salt packing guidelines
 - Standardization of messages to be printed on iodised salt packs
 - Issue of guidelines to salt producers to follow PFA guidelines of 30 ppm iodine
5. Follow up with Madhya Pradesh office on guidelines being followed for checking road and rail movement. Review and ensure PFA guidelines for usage of titration method adhered to.
6. Propose to consuming states, especially Madhya Pradesh, to organize meeting of salt wholesalers with traders at Indore.
7. Analyse, through visits and discussions, implications of free supply of KIO_3 by MI. This will facilitate in informing UNICEF and in taking timely actions towards ensuring salt iodisation and production is not adversely affected due to free KIO_3 supply.

B. Bhavnagar region

- 1) Revisit the TOR of extender since only 18 units to be visited per month. The extender could be effectively used for establishing a district plan of action for reaching community and retailers through the school children.
- 2) Wholesalers in salt producing districts as well as the entire state could be mapped and reached. Currently extenders are mapping the chakkies.
- 3) Meeting of Food and Drug Inspectors could be organized to sensitise them about USI and the role that could be effectively played by them in ensuring adequate iodine levels.
- 4) Advocacy to review the role of salt dept in monitoring iodised salt moving by rail as well as by road.
- 5) Mapping of all salt producers and iodisation units. Exploring involvement of the Salt Dept in monitoring levels of iodine in registered and unregistered. Mobility support to salt Dept to visit all units and in developing a system for feedback by computerization of circle offices.

- 6) Advocacy for making it mandatory to sell iodised salt in one kg packs.
- 7) Supporting in establishing a system for making STKs available in the market for wholesalers.
- 8) Organising a meeting of Central Salt and Marine Chemical Research Institute with Bargara salt producers regarding production of powdered iodised salt. Also follow up on checking quality of potassium iodate supplied and in being a part of the monitoring system.
- 9) Technical support by the Central Institute in checking and improving quality of salt produced by small producers.

- 10) State Government has yet to issue a notification on ban on sale of non-iodised salt for edible purpose. PFA is a state subject and the national ban has to be included under the PFA Act of the State government and a notification accordingly issued by the state government.

- 11) Usage of two types of STKs , MBI and ICCIDD , is causing confusion since intensity of colour produced by the ICCIDD kit is high even for below 15ppm samples.

Field visit to Rajasthan

- **Jaipur**

USI (Rajasthan) report by Sheila Vir, Consultant

Field Visit to Rajasthan 11-14th June 07

I Objectives of the Visit:

- 1) Review UNICEF support to Rajasthan state and identify programme inputs that could be strengthened.
- 2) Visit salt works of Rajasthan and propose interventions towards achieving the USI goal.
- 3) Hold discussions with Salt Department and identify specific actions that would facilitate acceleration in achieving the USI goal.

II. Persons met --Dr Satish Kumar, State Representative, UNICEF Rajasthan, Ms Minaxi Singh, APO Health and Nutrition, Salt extenders (Shakers) --Mr Krishna Gautam and Mr Anil Dwivedi.

Hindustan Salts---Mr Ram Khirani, Asst Manager Commercial

Ms Vandana Sharma and Mr. Neeraj Nag, .Plant Inspectors

Rajas Salt Works---Mr M.L.Meena, Salt Inspector, Dept of Salt, Mr Akhilesh Mathur and Mr Anil Gatani, President of Govind Marwar Iodised Salt Management Associations. Suppliers.

Mr Ansari, Deputy Salt Commissioner, Mr Ram Shabd, Asstt Salt Commissioner, and Mr Bal Krishna, Superintendent of Salt.

Salt Producers/traders of Rajas, Nawa, Kuchaman.

Social Marketing team of Kuchaman City.

III Activities:

A) Meeting at UNICEF Jaipur on 11th June . Brief discussion was held with Dr Kumar to understand the scenario of the USI programme, UNICEF support and the salt iodisation programme issues that need special attention were discussed.

UNICEF support is primarily for creating demand through the social marketing strategy and for ensuring quality production and movement of iodised salt within and from Rajasthan. For demand creation, UNICEF provides financial and technical support selected NGOs to create demand for iodised salt through a social marketing strategy.

The support to increase quality production of iodised salt has been intensified by UNICEF by the placement of three persons as Salt Extenders (Salt Shakers) in August. These extenders are based in the following regions and support the iodised salt producers.

It was interesting to note that these extenders have received an identification batch , issued by the Addtln Director, IDD Cell, Govt of Rajasthan, which facilitates working with the salt producers as well as enhances the status of the extenders in Rajasthan.

- a) Mr Krishana Gautam--Nawa and Deedwana regions
- b) Mr Anil Dwivedi -----Rajas and Govind Marwar, Kuchaman
- c) Mr Santosh Gupta -----Phalaudi, Baap

Dr Satish Kumar expressed concern regarding the following issues and suggested that these are looked into.

- Iodisation plant quality--design constraints for production of iodised salt
- Movement of non-iodised salt to Madhya Pradesh state.
- Small salt producers/cultivators under the WFP-MI supported project
- Potassium iodate support to selected producers.

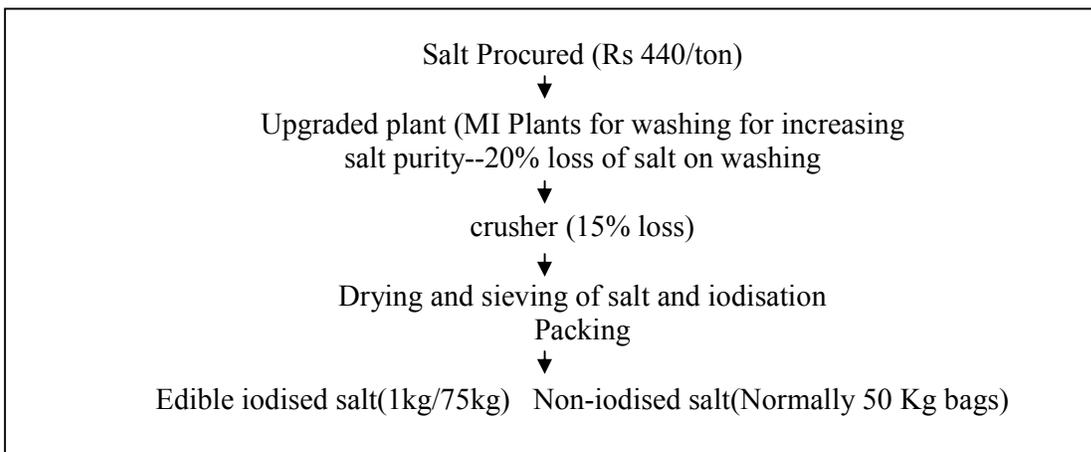
With UNICEF support, the consumption of iodised salt has increased significantly in the past two years and is estimated to be about 70% as against 40% reported by ICCIDD in 2004. Simultaneously, availability of salt with nil iodine has decreased to about 20%.

B) Field Visit to Salt Works and meeting with Iodised salt Traders/producers.
-----12th and 13th June 07

Field visit was made accompanied by Ms Minaxi Singh, APO Health and Nutrition, UNICEF and UNICEF appointed extenders, Mr Krishna Gautam and Mr Anil Dwivedi. Iodised Salt Production in Rajasthan was reviewed. In Rajasthan, iodised salt is produced Nagaur, Churu, Seekar, Jaipur and Jodhpur districts--total production being about 8 lakh tonnes. Of the 18 potassium iodate units, only two units are based at Rajasthan. In Rajasthan, salt is being supplied through the public distribution system to selected areas--primarily tribal.

i) Visit to Hindustan Salts, Sambhar Lake . This is a government of India enterprise and is registered as Hindustan Salts. The unit has received machinery support from MI to improve on quality production of iodised salt which can be supplied to meet the need of the poorer population. Discussions were held to understand the current system of production (Fig I) as well as to review the system in place for monitoring iodine levels.

Fig I --Salt Iodisation Process using MI supplied equipment



Most of the production has shifted to production of industrial salt at the rate of Rs 6.20/kg. Industrial salt bags have a label indicating for industrial use. This has been a practice followed by Hindustan Salts for quite some time and the staff was not aware of any Gazette notification regarding labeling of salt being sold for industrial purposes.

Regarding edible salt, Hindustan Salts sells a large portion to army, dairy cooperative and to the state of Himachal Pradesh. The selling price of edible iodised salt to these sectors by Hindustan Salts is Rs 2,40/kg while the price to consumers is Rs 3- 4 per kg. Additionally, iodised salt enters the private market of the network of wholesalers and at their request Hindustan Salt prints a very high MRP of Rs 9,00 /kg. The possible adverse implications of indicating such high MRP by Government unit was discussed. It was indicated that very often this MRP rate of Rs 9.00 is viewed in the non-salt producing consuming states as the cut off price to be demanded as MRP by the wholesalers for powdered packed iodised salt. This possibly results in giving the perception to the public that iodised salt is a costly product as against non-iodised or open crystal salt.

It was therefore suggested that the government salt units could consider playing an important role in lowering the MRP price to a practical cut off of Rs 5.00 per kg. This will possibly have a positive impact on other salt iodisation traders and will facilitate in the sale of iodised salt. The team agreed to present the issue of price to the managing committee, especially since MI has provided substantial support to Hindustan Salt for ensuring poor persons purchase iodised salt.

Sambhar salt has a very good supervisory and Laboratory team. The idea of using the Iodine testing monitoring registers, produced by UNICEF Gandhinagar, (already approved by the Salt Commissioner's office and under print with UNICEF support) appealed to them. It was therefore agreed to follow up with the Salt commissioner's office and UNICEF (Jaipur).

ii) Visit to Rajas Salt Works --Meeting was held with Mr Anil, the president of Rajas Salt association, representatives of iodised salt traders and the Salt Inspector of Rajas. In Rajas, 65 recognized salt units move salt by rail and road while 16-17 unrecognized units move salt by only road. The outlets by road are by two routes---to Bikaner and Jaisalmer and the second one to UP.

The primary concerns of the Rajas salt producers were a) Free supply of Potassium Iodate by MI-ICCIDD and b) WFP (World Food Programme) support to small salt producers cooperatives.

According to the Rajas team, initially MI support for supplying free 15% of requirement of potassium iodate covered all salt producing units of Rajas. This was also linked to the condition that the continued additional support will be given by MI only when there was 10% increase in production. In case, this target was not met, the iodised salt traders will be viewed as fresh applicants and reviewed by MI for support. According to them, the MI support has since been revised and the criteria are not known to them. A total of 15 units based at Nawa and Rajas are planned to be supplied 30% potassium iodate by MI-ICCIDD as well as iodisation machine (costs about Rs 2.50 Lakhs). Salt Guru plan had already received a machine from ICCIDD.

The group of Rajas as well as the representative of the Salt Department communicated that the local Society has not been involved in the selection of the 15 plants. It was evident from the discussion that they were all concerned of its adverse impact on the relationship of traders since a rift was already occurring. Moreover, undesirable practices such as not using proper concentrate of iodine solution for iodisation as well as selling of potassium iodate by salt cooperatives to Salt iodisation traders etc was noted.

The Salt producers the group expressed concern about supporting a single NGO (CECODECON) by WFP for formation of cooperatives of unrecognized small salt producers (with less than 10 acres of common salt) for supporting iodisation activities----- iodisation machine and 100% one year supply of potassium iodate. According to them, the small salt producers do not have readily available market to sell iodised salt and therefore there will be total dependency on the existing iodised salt traders who already have a established marketing system. As per their views, the WFP support for one year will not take off in true terms of supporting USI goal. The group felt that in one year these small salt producers will not be able to create a market but will create disharmony amongst the traders which in fact will have adverse impact on salt iodisation trade.

The above was the view of the local salt iodisation producers which needs to be studied systematically. On the other hand, we need to also see the positive side of this activity .For example, support to small producers may be politically correct to give assurance to the anti-USI lobby that effort was being made to address the poor condition of small salt producers. I was informed that the WFP proposal to date has not been shared either with UNICEF or the Salt Commissioner's office. From the discussion, it is evident that in the interest of the USI goal, it would be important for UNICEF to take the lead and contact all donors / stakeholders and fully understand the pros and cons of the WFP programme and MI support. This is considered urgent and critical so that the three primary funding agencies, with full understanding, will work as a team and will take timely actions to drop or add programme inputs essential for monitoring and accelerating progress towards the achievement of USI goal.

The salt iodisation traders/producers proposed that the criteria for the selection be made transparent and should be done in consultation with them and the salt department and not governed by the views of the MI appointed extenders who are persons associated with salt industry of Rajasthan.

These traders, as noted in Gujarat, believe that all edible salt should be marketed only in one or half kilo packs. The demand for 500 gms is currently low except in Agra, Bareilly regions of UP.

The discussion with the group revealed that as a routine a meeting of the salt union members is held every month while members of the salt association meet bimonthly. Both these forums offer excellent opportunities to the UNICEF extenders to discuss results of salt monitoring. It was therefore agreed with Ms Minaxi Singh that every month the extender could present a matrix of results of monitoring with details of iodine levels against the names of salt units. It was important to present and discuss the results by names of producers so that there was a

pressure group created within the network of association members to ensure all the iodised salt producers adhered to the norm.

iii) Visit to Nawa Salt Works --Largest salt producing region of Rajasthan---. 60% of salt moves by rail and 40% moves by road. On the other hand, it may be noted that in Rajas only 70% salt moves by road and 30% by rail. The salt producers discussed the problem of KIO₃ supply by MI as well as the WFP project. The views expressed were exactly what has been stated above in the discussion with Rajas salt.

Iodisation process of Nawa salt has a special problem in mixing of salt with diluted solution of potassium iodate to ensure proper mixing of “heap” of salt with potassium iodate. The process of mixing is rather crude and for ensuring proper mixing, the potassium iodate solution is often mixed with a larger quantity of liquid and this results in the production of iodate solution below recommended concentration of 3-4% . This results in production of salt with high moisture content and very often low levels of iodine. Iodised salt is often dried prior to packing. According to the Salt Department, the drying in hot sun does not result in loss of potassium iodate since it rather stable. However, the problem of using diluted potassium iodate solution remains. A system therefore needs to be in place for random checking of the concentration of potassium iodate.

The Salt producers of Nawa (as also of Rajas) complained that iodised salt testing kits were not being properly used for testing alkaline salt of Rajasthan. According to the correct checking practice, alkaline salt should be tested on only a spoonful of salt i.e. salt which gives negative result with the white cap solution should be discarded and a fresh sample be taken for testing sample. This will ensure appropriate acidification of smaller quantity of salt by the red cap bottle solution of the kit. The white cap solution should then be put on the portion already acidified. Interestingly, the instruction on the kit do not state that a fresh sample of salt is used for testing and discarding of the salt sample when a negative result is obtained with the use of white cap solution. The instruction on the MBI kit therefore needs to be checked and corrected. In this context, the iodised salt producers complained of the incorrect actions taken in states of MP and Bihar where movement of iodised salt was stopped after checking with the salt testing kits and incorrect use of the kit for testing alkaline salt of Rajasthan.

Eighty percent of salt producers do not have proper titration units---UNICEF (Jaipur) could review the situation and give supply and training support. In addition, UNICEF could supply standardized registers.

iv) Visit to Kuchaman Salt works---In this region, raw salt used is of very poor quality of land salt---NaCl being only 85-87%. The salt is often not iodised by the 8 Chakkiwallahs based in this region. During the visit to one of the chakkies, it was evident that salt is not iodised and marketed ‘correctly labeled’ as only “salt” for edible purposes in 500gm and one kg packs at a cost of Rs 3.00. The salt from this region very often is moved by road to the neighbouring districts and possibly to other parts. It was suggested that salt extenders for the next month monitor these chakkies intensively and facilitate in iodisation. Frequent visit and checking by salt extenders may help in bringing out a change. I was also informed that the district authorities are also involved in checking movement of non-iodised salt from this

region for edible purposes and a cut off date of 21st June has been set for follow up legal action by the SDM,s office.

v) Social Marketing of Iodised salt--visited the Kunchaman city and discussed the strategy. It is interesting to note the involvement of NGOs and individuals under the active leadership of Ms Minaxi Singh. UNICEF support is primarily for IEC, Unfortunately, the iodised salt marketed (Doctor Salt) is presumed to be the brand promoted by UNICEF. Actions for discouraging associating the salt as UNICEF salt were discussed.

C) Meeting at the Salt Commissioner's Office --Discussions was held on the above observations made in Rajasthan as well as the programme issues listed in Gujrat. Following is a summary of discussion with the Deputy salt Commissioner. The Salt Department agreed to the field observations and suggestions made for accelerating the USI goal.

The total production of iodised salt in India is 49 lakh tonnes against the total requirement of 54 lakh tones for human consumption The state of Rajasthan produces 7.88 lakh Tonnes of iodised salt as compared to 33 lakh tons by Gujarat and 6.02 lakh tones by Tamil Nadu.

1) Salt Dept expressed that it would be beneficial if MI -WFP and UNICEF all team up and provide support as it was done for the recent training in monitoring conducted in Rajasthan with the joint support of the 3 agencies. It was proposed that a joint meeting could be organized by UNICEF Jaipur office to understand the ongoing support activities of the various agencies. In this context, UNICEF was requested to follow up on the minutes of 11th April meet organized held with WFP, UNICEF and the Salt Commissioner's office.

2) Salt Dept agreed that letters will be sent to all the iodised salt producers on a) minimum level 30 ppm iodine at production level was mandatory b) the gazette notification describing its implications c) labeling of non-edible salt bags with the phrase "not for sale for edible purposes" and d) usage of standardized monitoring registers (as in Gujarat with UNICEF support).

3) Salt dept were concerned that stopping salt movement by road in MP was in fact breeding corruption. Salt Dept view was that early action was beneficial but its follow up action on corruption by state authorities should be taken into consideration since it will in fact have adverse effect on USI.

4) Use of testing kits for checking salt for legal or state level action for stopping road movement should be discouraged. Only titration method should be followed and support for titration kits by UNICEF was considered useful. Moreover, instruction on use of red cap on the instruction label of MBI kit should be revised.

5) Standardised message on implications of iodine deficiency will be drafted by the Salt Dept and shared with iodised salt producers. This was in fact also a request from iodised salt producers of Gujarat. Such an action will facilitate in imparting and reinforcing correct messages on importance of iodised salt

6) It would be useful if Extenders of UNICEF participate in the regular meetings of the Salt association members and discuss the results of iodine level monitoring, Salt dept will participate .

7) Reducing the MRP by the Hindustan Salts will be followed up by the Salt Commissioner's office in the interest of USI.

8) Iodised salt plants have a number of problems e.g. nozzle. Compressor, non-use of compressor in order to be within the horse power for the minimum cut off limits for electricity for industrial usage. Salt Dept would review the plants installed to support in increasing efficiency.

9) Potassium iodate solution strength to be monitored by the Salt Dept. It was agreed that random samples could be collected by the Salt dept inspectors. Help of extenders could be sought in consultation with the UNICEF (Jaipur) office.

10) The implications of free supply in part or 100% by a selected potassium iodate producer (as per the ongoing support of MI,WFP) on the overall marketing of KIO₃ and its adverse impact on the trade was brought to our attention. The cumulative effect of the benefits of tax and octri of 4% by the selected supplier in monopolizing trade, including dictating price was discussed by the Salt Dept.

11) Salt dept indicated that repackers in the consuming states are mapped and follow up support is given to ensure packing of salt with appropriate levels of iodine.

12) Salt dept is aware of the problems related to sale of poor quality Kucheman salt. Agreed to follow up and give special attention to the quality iodised salt.

13) Salt dept agreed to give support to Gujarat bargara/phoda salt producers regarding the technology for packing salt in one kg packs.

14) Effort will be made by the salt department to advocate that all edible iodised salt is sold in one kg or half kg packs.

D) Debriefing Meeting With UNICEF(Jaipur) -- A debriefing meeting was held with Dr Satish Kumar and Ms Minaxi Singh and they agreed to follow up on the issues 1-14 listed in the outcome of the meeting with the Salt Department.

II) Actions for USI goal --- Details listed under IIC

Summary of Emerging Recommendations ----Rajasthan Iodised Salt Production

- 1) Salt Dept expressed that it would be beneficial if MI -WFP and UNICEF all team up and provide support as it was done for the recent training in monitoring conducted in Rajasthan with the joint support of the 3 agencies. It was proposed that a joint meeting could be organized by UNICEF Jaipur office to understand the ongoing support activities of the various agencies. In this context, UNICEF was requested to follow up on the minutes of 11th April meet organized held with WFP, UNICEF and the Salt Commissioner's office.
- 2) Salt Dept agreed that letters will be sent to all the iodised salt producers on a) minimum level 30 ppm iodine at production level was mandatory b) the gazette notification describing its implications c) labeling of non-edible salt bags with the phrase "not for sale for edible purposes" and d) usage of standardized monitoring registers (as in Gujarat with UNICEF support).
- 3) Salt dept were concerned that stopping salt movement by road in MP was in fact breeding corruption. Salt Dept view was that early action was beneficial but its follow up action on corruption by state authorities should be taken into consideration since it will in fact have adverse effect on USI.
- 4) Use of testing kits for checking salt for legal or state level action for stopping road movement should be discouraged. Only titration method should be followed and support for titration kits by UNICEF was considered useful. Moreover, instruction on use of red cap on the instruction label of MBI kit should be revised
- 5) Standardised message on implications of iodine deficiency will be drafted by the Salt Dept and shared with iodised salt producers. This was in fact also a request from iodised salt producers of Gujarat. Such an action will facilitate in imparting and reinforcing correct messages on importance of iodised salt.
- 6) It would be useful if Extenders of UNICEF participate in the regular meetings of the Salt association members and discuss the results of iodine level monitoring, Salt dept will participate.
- 7) Reducing the MRP by the Hindustan Salts will be followed up by the Salt Commissioner's office in the interest of USI.
- 8) Iodised salt plants have a number of problems e.g. nozzle. Compressor, non-use of compressor in order to be within the horse power for the minimum cut off limits for electricity for industrial usage. Salt Dept would review the plants installed to support in increasing efficiency.
- 9) Potassium iodate solution strength to be monitored by the Salt Dept. It was agreed that random samples could be collected by the Salt dept inspectors. Help of extenders could be sought in consultation with the UNICEF (Jaipur) office.
- 10) The implications of free supply in part or 100% by a selected potassium iodate

producer (as per the ongoing support of MI,WFP) on the overall marketing of KIO3 and its adverse impact on the trade was brought to our attention. The cumulative effect of the benefits of tax and octroi of 4% by the selected supplier in monopolizing trade, including dictating price was discussed by the Salt Dept.

- 11) Salt dept indicated that repackers in the consuming states are mapped and follow up support is given to ensure packing of salt with appropriate levels of iodine.
- 12) Salt dept is aware of the problems related to sale of poor quality Kucheman salt. Agreed to follow up and give special attention to the quality iodised salt.
- 13) Salt dept agreed to give support to Gujarat bargara / phoda salt producers regarding the technology for packing salt in one kg packs.
- 14) Effort will be made by the salt department to advocate that all edible iodised salt is sold in one kg or half kg packs.

Field visit to Tamil Nadu

- **Chennai**
- **Tuticorin**

Field Visit --Tamil Nadu --10-12th July 2007

Report by Sheila Vir, Consultant

The report presents **1)** an overview of the USI status in TN with reference to iodised salt production **2)** details of the statewide USI activity through a consumer organization network **3)** analysis of status and proposed actions.

The report is based on the meeting with UNICEF staff (Dr Janthi Padiyan, APO, Heath and Nutrition, Mr Michael Susai, IDD Consultant, USI extenders--- M.Saravanam, K.J.Sabasthian, R.Chandrasekaran), presentation by Prof Duraisingam, the FEDCOT chairperson, discussion with Mr Chandrasekaran of MBI Chemicals. In addition, available USI related reports were studied .

Field visit to salt works is planned in August and this will give further insights into production and marketing of iodised salt.

1) USI activities in TN --An Overview.

a) Iodised Salt Production status

In India, TN is the second largest salt producing state with a production of 22 lakh tons and the third largest iodised salt producing state with a total production of 6.02 lakh tons. (Ref-- Salt Com Office, Directory of Iodised salt Manufacturers , Salt Refineraries, Potassium Iodate).It is interesting to note that in TN only about one fourth of salt produced is iodised and the rest is projected to be sold for industrial purposes.

The three major salt producing regions are Tuticorin (Tuticorin district), Vedaranyam (Nagapattinam district) and Marakanam (Villupuram district). Additionally, a small amount of iodised salt is produced in Kancheepuram, Kanyakumari, and Ramnad. Highest production is in Tuticorin--about 85% of iodised salt produced in TN. A state government enterprise, Tamil Nadu Salt Corporation (TNSC) produces 70,000 metric tons of edible iodised salt and of this only 30,000 metric tons of salt is supplied within TN---primarily to the public distribution network (about 24,000) and mid-day meal programmes at a subsidized low rate of Rs 2.50. The low cost PDS iodised salt is referred to as “Arasu Uppu” meaning “government salt.

Potassium iodate is not available within the state and is procured from outside the state--- primarily from Gujarat. Two potassium iodate production units were operating upto 2005 in TN and around TN --Quality Inorganic Chemicals Pvt Ltd based at Chennai and MBI Chemicals based at Pondicherry. The production and sales figures indicate about 50% reduction in production and sale of potassium iodate in the TN based potassium iodate unit, Quality Inorganic Chemicals ---production decreased from 1135 kg to 550 kg in one year time. Similarly a decrease in production was noted for the MBI chemicals---from 4669 kg in 2003 to 2622 kg in 2005.Both the potassium iodate production units of TN and Pondicherry have closed down in the recent past.

It appears that potassium iodate business is found to be not economically viable. This is primarily due to wide fluctuation in the international trade price of iodine which adversely affects the profit margin and the business interest. Moreover, it appears from the discussion that one or two large producers of potassium iodate tend to have a monopoly in the market and this has resulted in discouraging the remaining potassium iodate producers to continue with the business. The issue of supply of potassium iodate by MI was also mentioned and this needs to be studied before any inference can be drawn.

b) IDD Programme support infrastructure

There is a Salt Commissioner Office unit in Chennai which is headed by Mr Jaipal, Deputy Salt Commissioner. IDD Cell exists at the Directorate of Health.

UNICEF has a good USI team headed by Dr Jayanthi Padiyan, APO (Health and Nutrition) and supported by an IDD consultant, Mr Michael Susai and three extenders---one each in the major salt producing region i.e. based at Tuticorin (Mr R.Chandrasekaran), Vedaranyam (M.Saravanan), Marakanam (K.J. Sebastian). In addition, there is

c) USI Activities and UNICEF Support

In addition to human resource support, UNICEF primary support has been to push USI programme as a priority programme in the state of Tamil Nadu. The positive impact of this is evident. Currently, about 50% salt is estimated to be appropriately iodised compared to only 37% in 2005. About 85% salt is estimated to have iodine. The PFA Act banning the use of non-edible salt for edible purposes has been revived in the state since Dec2004. IDD Programme is included in the State Plan of NRHM.

UNICEF has provided supply support --IEC materials including charts, bills etc. Thirty four laboratory kits (21 supplied in Tuticorin District) have been supplied to iodised salt producers for estimation of iodine by titration method; Training support has been given to the lab person identified by the salt iodisation units regarding skills on using the kit as well as support for monitoring quality..

In 2006-7, UNICEF has supported a number of training programmes.--state sensitization programme, IDD orientation to PDS salesman in 6 of the 30 districts, training in laboratory method to laboratory persons attached to iodised salt producers as well as training to ICDS programme managers and functionaries. Training for District Supply officers linked to the PDS and of about 100 PFA inspectors is planned for this year .

In addition to these, UNICEF coordinates with MI activities. MI has a staff person based at Chennai. MI has provided hand spray machine for iodisation of salt heap-wise by small producers. Technical support has been provided by the UNICEF extenders in the conversion in salt production cultivation pattern, revival of cooperative society and its supply to TNSC, diversion of location of salt plants, enhanced production by small salt producers, collective farming, and linking marketing of iodised salt by SHGs and NGO network and supporting procurement of iodine.

The role of extenders specifically with reference to monitoring quality production and marketing of iodised salt was not evident from the discussion and presentation. However, the report of the extender, Mr Saravanan indicates that every month 8-10 visits to salt work sites were made by the extender to check iodine levels in salt. Establishment of a monitoring system with a standardized recording and reporting system is considered crucial for routinely providing feedback to iodised salt producers and for ensuring timely action is taken by them to adhere to the norms.

Taking the above into consideration, it would be useful to discuss and develop an action plan for extenders with specific focus on monitoring and supporting iodised salt traders to produce iodised salt as per the PFA Act. Accordingly, the extenders could reduce their support in increasing production. The role played by extenders in fact will be better understood following the planned visit to the Salt works in August. It is proposed that the role of extenders is discussed with UNICEF and modifications introduced to ensure optimum usage of their presence in the salt producing districts..

UNICEF major support has been for the statewide programme being implemented by FEDCOT (Federation of Consumer Organization --Tamil Nadu and Pondicherry). Details of the programme are presented.

d) FEDCOT and USI Programme --Supported by UNICEF.

FEDCOT, founded in 1991, is a consumer organization with 247 registered consumers with the objective to promote and protect consumer's interest and welfare. The organization focuses on activities pertaining to research, education, awareness and advocacy. Each district has one male and one female coordinator. The organization has built linkages with community based organization which service to grassroots people.

FEDCOT, with UNICEF support, launched the USI programme in 2004. The programme was implemented in 3 phases in the 30 districts of TN----in the first phase 10 districts were covered .Additional 10 districts were covered in the second phase. In the third phase, the remaining 10 districts of TN were added to the programme. To date, a total of 29 districts and Chennai are covered under the USI programme. The organization has a presence of members in each of the district and therefore has a spread out presence.

In three years, a total of 462 panchyats (out of 12,300 in the state) and 75 municipalities (out of 152 municipalities in the state) of these districts have been covered for educational activities with focus on the promotion of iodised salt.

In each panchayat, a minimum 100 shops, 200 households, 3 schools and 3 SHGs are aimed to be covered while in each Municipality, the organization plans to reach 400 households and 200 shops. In a period of 3 years, 2334 schools, 49,900 households, 48000 retailers and 5207 SHGs have been reached. Salt sold in packages and branded were tested. A sticker on iodised salt was pasted in each of the retailers visited. Total number of brands tested is recorded in the project period was 634 and of these 279 were reported to be iodised. UNICEF supplied support for IEC materials and 17,500 salt testing kits.

Advocacy inputs were given by FEDCOT to the State Government to revive the PFA act as well as convince the government to sell iodised salt through the public distribution network.

FEDCOT database indicates about 75% households are using iodised salt against about 50% using salt with appropriate level of iodine. According to the organization, iodised salt being sold open or non-packaged has disappeared from the market. With FEDCOT advocacy, the Public distribution shops (PDS) ensures that the iodised salt sold has appropriate levels of iodine. Unfortunately, FEDCOT has not systematically collected or analysed information on whether salt is sold open, in big sacks or only in one kg packaging of iodised salt. Moreover, the data on iodised salt presented by FEDCOT indicates only the presence or absence of iodine but does not provide information on the trend regarding marketing and availability of salt with the prescribed level of iodine - equal or over 15 ppm. This information is critical since the indicator for measuring the progress on USI goal is % of salt “with over 15ppm of iodine”. It is therefore important that this indicator is kept in our mind while dialoguing at every level ---with producers, retailers or consumers. It is also desirable that FEDCOT plays an important role in external monitoring and encouraging adherence to the PFA Act.

Despite a few areas requiring strengthening, the FEDCOT has played a significant role in accelerating the progress in the USI goal. The organization is referred by name as a critical partner in the NRHM state plan of action. It is therefore important that UNICEF support is extended to FEDCOT for a minimum period of two years. The plan of action, however, needs to be reviewed and revised with higher focus on monitoring the implementation of PFA Act and improving quality of iodised salt. Additionally, reaching unreached villages by mapping of panchyats is recommended. It would be important to reach middle schools and retailers of these panchyats. Moreover, school to community programme could be reviewed and strengthened in the future plan of action.

e) Report on “Rehabilitation Need Assessment Report of Salt Iodisation Plants in TN State.”

The above report, prepared by Mr Jagdish Tripathi, Ex-Deputy Salt Commissioner, was reviewed. The report presents recommendations for replacement and repair of iodisation plants in TN. Majority of the 50 plants surveyed were established in 1995. Twenty of the 50 plants were donated by UNICEF. According to Mr Tripathi, all UNICEF supported plants need to be repaired or replaced, Currently, MI is supporting repair of 3 plants. As per the information, no further support from UNICEF has been finalized. The total cost of repairing UNICEF supported and private plants is estimated to be Rs 14,30,600 (US \$).Additionally, the study recommends provision of two powdering machines to be supplied with an estimated cost of Rs 5.40 lakhs. Recommendation of the study on rehabilitation of plants need to be followed up since this will play a critical role in production of iodised salt and in accelerating achievement of USI goal not only in TN but in other southern states such as Kerala, Karnataka, AP as well as the eastern states of West Bengal and Orissa.

2) Proposed Actions

- Promotion of packaged iodised salt for edible purposes. Use of smiling sun logo used for promotion of iodised salt not only on packages but as danglers in shops..
- Explore support for establishment of packaging units to small producers . The problem of packaging under incorrect information has not been resolved for years. The scope of addressing this issue through a consumer group can be discussed with consumer organization and consensus reached.
- Data on Iodised salt production and consumption in Tamil Nadu needs to be segregated in terms of iodised salt with 15 ppm of iodine and below 15 ppm of iodine. This is also evident from the findings presented for 62 branded (non-popular) salt tested by the titration method. Of these brands, 58 had iodine content less than the prescribed level of 15ppm and above.
- System to check whether open salt is being used by households for edible purposes since common salt is sold not only for industry and animal feed but also for enriching the soil around the coconut trees.--1 to 2 kg per tree required every quarter before the yield.
- Salt testing kit is a semi-quantitative tool but can be used effectively to monitor level of iodine in salt and for taking timely action.
- Establishment of a system for monitoring levels of iodine needs a special focus. Such a system could be developed for follow up by various partners --- extenders, FEDCOT and other organization.
- The problems of titration, such as preparation of stock solution and usage of standardized registers, needs to be reviewed with a view to resolve the laboratory problems.
- Production, sale and timely availability of potassium iodate needs to be studied so that there is no hindrance in the supply of potassium iodate and production of iodised salt is not influenced. A joint advocacy by the international partners in India is considered important for controlling the international price of iodine so that there is positive interest in the economic viability of potassium iodate trade and the potassium iodate production units continue to function.
- Free supply of potassium iodate to selected iodised salt producers is causing some ripple in the market. It is important that UNICEF,MI,WFP jointly study the implications of free supply of potassium iodate and a consensus is reached regarding the policy of free supply of potassium iodate , with particular reference
- to the process and transparency in the selection of beneficiaries as well as in the establishment of a monitoring system.

- UNICEF support to FEDCOT is extended for another two years and a revised plan of action is prepared. The difficult to reach areas are mapped and special attention is directed to reach them.
- Salt wholesalers and middle schools in each district are mapped and a plan of action is prepared to sensitise wholesalers and reach families through school to community approach in a systematic and sustainable way.
- Role of extenders is reviewed with a view to increase focus on establishing an MIS system in the iodised salt producing regions.
- Supply of laboratory kits by UNICEF is reviewed with a view to ensure a system for testing of iodine levels in salt is established and adhered to. Mapping of iodised salt producers with or without laboratory support could be undertaken for identifying selection of units which need laboratory support.
- Recommendations of the rehabilitation of plants are reviewed and UNICEF support finalized at the earliest.
- The PIP of NRHM of TN state clearly spells out the activities to be undertaken under the USI programme ----a very useful outcome of the advocacy by Dr Jayanthi PEDIYAN of UNICEF. The NRHM offers the opportunity for acceleration
- of USI activity in TN. Moreover with the gazette notification in place, there is a high possibility of a good push by the TN government.

3) Follow Up ---Visit to Salt works in August. Two separate trips are planned to review the USI programme in TN --first to Tuticorin to and the second to the remaining two primary salt producing districts of TN---- Vedaranyam (Nagapattinam district) and Marakanam (Villupuram district).. Following these visits, the proposed actions will be reviewed and specific recommendations will be presented including the issue of small iodised salt producers.

Report of Field Visit to Tuticorin Salt works, Tamil Nadu 20-24th August 07

Persons Met---Mr. V.V.D. Ravindaran, President of the Tuticorin Salt Producers Association and 19 members, Mr Thenraj, President, Viyaparigal Jaugar, Mr Peter Jebaraj, Manufacturers Association, Mr Gragadevai, President, and A.R.A.S. Dhanabalan, Secretary of the Small Scale Salt Manufacturers Assoc, Mr Shantha Kumar, Arumuganeri Salt Cooperative Manager, MS Gauri of Women's Federation, Ms Parvathi, Secretary SHG, Mr. J.Natrajan of S.J.Salt. P.S.Selvaraj of Nandan and sons.

Mr. D .Shiv Kumar, Superintendent, Salt Dept, Tuticorin, Salt Extender, Mr. Chandrashekar, and IDD consultant, UNICEF Chennai. Mr Michael Susai.:

Places Visited--Salt works and Iodisation Units of Tuticorin, Salt Department, Tuticorin.

Details of the Field Visit 20-24th August 07

A. 20th August---Tuticorin--Meeting with the members of Salt Manufacturers and Merchants Association. A total of 19 members were present in the evening meeting organized by the extender, Mr. Chandrashekar. Following is a summary of emerging information:

1) Tamil Nadu produces 22 lakh tones of common salt and 602,000 tons of iodised salt. As per the record of the Salt Department, in Tamil Nadu, there are 3325 salt works and of these 3139(94.4%) are small producers of category III and IV with less than 10 acres of land. Total common salt production in 2006 of these small producers is reported to be 834,000 MMT against the overall common salt production of 2,075,000 ---the share of common salt production being 40.2 % with the small producers. On the other hand, only 12 of the 3139 salt producers (0.39%) have salt iodisation units with a capacity to produce only 142,000 MMT of iodised salt against the total 12,921,000 MMT installed capacity in the state i.e. 10.9 % of the total capacity of the state for iodised salt production. In terms of total common salt produced by these small producers, they have a capacity to iodise only 17% of the common salt that was produced by them in 2006.

Majority of small producers supply salt to traders for iodisation and for onward marketing. In case the small producers iodise salt, there is a large dependency on traders to market the produce. In TN, there are 21 traders who have one fourth of the total capacity of the state to iodise salt while the capacity of the iodisation units of 17 refineries to iodise is almost the double of the traders ---about 54 % of the total installed capacity. Table I presents the details.

(a) Small producers, often belonging to the same family, jointly undertake salt business since it is cost effective to work together for a unit for areas of 40-50 acres rather than 10 acres. However, records on paper indicate the units as individual small holders of less than 10 acres. This practice is common since it spares them the effort of registration with the salt department as well as keeps them outside the purview of the Salt Dept for monitoring.

Table I**TAMILNADU**

S. No.	Category	No of Salt works	No of iodisation units	Installed capacity (in MMT)	Production during 2006 (In MMT)	
					Common Salt	Iodised salt
1.	2.	3.	4.	5.	6.	7.
1.	I	41	9	132,500	1076,000	582,700
2.	II	145	1	15,000	165,000	
3.	III	1009	6	69,000	213,000	
4.	IV	2130	6	73,000	621,000	
5.	Traders	-	21	302,000	-	
6.	Refineries	-	17	700,600	-	
	TOTAL	3325	60	1,292,100	2,075,000	799,400

(b) There is an increasing problem of laborers for iodisation and packing since small producers to date were dependent on low cost labour for harvesting as well as iodisation and packing. Most of the men laborers are getting a better job in the district of Tuticorin where new industries have come up and there is a much better work environment. Young women workers have mostly shifted to other districts such as for textile industry in Coimbatore where they get better wages as well as a good working environment.

(c) Small producers are increasingly using hand sprays for iodisation since the machine costs only Rs 1000 against the cost of mechanized iodisation plants.

(d) There is increasing demand for free flow iodised salt which small producers do not get into.

(e) Quality of KIO₃ is not of the expected grade. One kg packs are available from the manufacturers but there is no quality check on iodised salt.

(f) Regarding free supply of potassium iodate by MI or ICCIDD, the group was apprehensive that the selection criteria for free supply are not known to them. Some stated 20% of the requirement was free, some referred to Rs 50,000 worth of KIO₃ received to date. According to some of them, potassium iodate was supplied to the selected producers to help them to compete with big producers. However, there appeared to be a lack of clarity on the selection criteria. The selection, as per their understanding, was done by Mr. Jai Ranjan.

(g) According to them the following three associations should be consulted for selection of agency for free supply---Small Scale Salt Producers Assoc, Salt Manufacturers Assoc, Licensed Salt Manufacturers Assoc. There should be a ban on sale of KIO₃ received free since it was noted that there was a tendency to sell up to 80% of the free supply and often KIO₃ was diluted prior to sale or self usage. Some of the producers thought it was beneficial to continue to be given free potassium iodate.

(h) The small producers referred to the labeling of non-iodised salt as "industrial" salt is resulting in malpractices. According to them, salt is transported as industrial salt packs of one

kg and then sold for edible purposes. In fact, this has made transport easier. They agreed to the suggestion that the label should state “Industrial Salt ---Not for sale for edible purposes”.

(i) Lifting of zonal system for movement of salt was not considered a good idea by the small producers

From the discussion and iodised salt production data base, it appears important to study and review to what extent small salt producers be directly involved in iodisation and how. The pros and cons of supplying free potassium iodate, crushing and iodisation units need to be studied in the context of labor problem and the continued increased demand for packed free flowing iodised salt. The stakeholders, including various international agencies, need to re-examine the situation in the context of USI goal as well as the benefits of supporting small producers for iodisation. By giving support in terms of KIO₃ or small iodisation plants, we are not resolving the problem but only helping in “delaying the disappearance” of small producers from salt iodisation business. May be we need to explore a new way of supporting them ---help these small producers to form cooperatives, with small producers having share holding rights, and for the establishment of automated units for the production of free flow iodised salt. Additional support could be given to small producers for establishing a laboratory for monitoring quality and technical support in the development and execution of a marketing strategy under a common brand name for the product. This will result in small producers not only in playing an active and not a passive role in the USI as well as in getting direct benefits by not remaining dependent on 1) laborers for production 2) costly KIO₃ supply in small packs or for small orders and 3) traders for marketing.

B. 21st August 07: Visit to Salt Works and a SHG

Following visits were made:

(1) Small Scale production Unit---S.S.V.Salt--Murugan Salt.

The unit has an area of 40 acres for salt production (4 units joint and therefore functionally not small producers) .Estimated production of 30 tons per week.KIO₃ requirement is 50kg for 45 days.KIO₃ is purchased in 25kg packs from Calibre Chemicals. Laboratory kit supplied by UNICEF was available --received on 3rd May, As per the record only one sample was tested. Normally, iodine level is tested when starting the machine using the salt testing kit.

MRP for Kerala is higher at Rs 4.50 per kg packs compared to TN packs of rs 3.50/kg. The demand is for free flow. Discussion revealed that the demand for free flowing salt was increasing specially in Kerala where 80% demand was for free flow. Discussion was held regarding the possibility of establishing free flow units. The producer proposed subsidy for free flow salt iodisation units costing 90 lakhs

(2) Sri Chairman Salt--Salt is produced by use of hand spray machine. The cost of machine is Rs 950.00 and the unit has 4 machines for four sheds. Similar machine has been supplied by MI to selected traders. For the production of iodised salt, iodine solution is sprayed on a heap of Kurkutch (small crystal) salt .This is mixed manually. Salt is packaged in one kg unit with the brand name “Sarvana” with MRP of Rs 7.00-8.00 kg. The weekly estimated sale of

iodised salt is 70 tons. Out of total 280 tons per month, only 100 tons is crushed. Additionally, 15-20 tons per month is sold for industrial purpose.

A 3% solution of KIO₃ is used for spraying. Potassium iodate is purchased from Anjali Chemicals at the rate of Rs 45,000 for one month's requirement.

Packing machine costs Rs 1.50 lakhs. This is not considered cost-effective. Manual packing is encouraged. For packing 25 one kg bags in one bundle, a labourer is paid Rs 2/per bag.

Random samples of iodised salt were checked for iodine level using STKs--the levels were above 30ppm. The hand spray machine consistently gave this result.

(3) Visit to SKCC Natrajan Brothers Refinery

The old methodology of refining was in use. There are 3 washers, one grinder and separator. There is a capacity to store 70 tons of finely ground salt. Capacity of production is 1.50 tons per hour and production is 1.25 tons per hour or about 40 tons per day. Additionally high quality 45-60 tons of industrial salt is produced. The factory produces three types of edible salt--- Diamond Table salt at the MRP of 500grams at Rs 6, S.S.GOLD and Sagar in one kg packs and Ruthura in 500gms packs. Packing is done manually---one woman prepares 2000 packs of one kg packs per 8 hrs /day. Labour is not a problem and more economical to have manual packing despite the fact machine will pack 20 bags or 500 bags per hour. Industrial salt is produced and sold in 50kg gunny bags. Message on IDD was noted in only the packs and not on table salt. The messages differed in its content.

Requirement for iodine is 30kg per month (2.5 kg of KIO₃ is dissolved in 35 litres of water). Cost of Potassium iodate is Rs 950-Rs 1050/kg.

A laboratory is well equipped to test quality of salt, magnesium, calcium levels as well and iodine level. A well trained person with degree in chemistry manages the laboratory. The records are well maintained. Sample is drawn periodically. Time of drawing sample varies from 15 minutes interval to over a hour. UNICEF lab kit has been supplied but is not used. The refinery has the capacity to train the lab person attached to other small iodisation units on use of the titration kits provided by UNICEF. The refinery could be trained to be the nodal trainer --one person can be attached to the lab person to learn by observation and doing. One day could be allocated to one person. The refinery could be awarded for it. Moreover, in consultation with such producers and the salt department, a guideline could be developed for the lab work.

(4) Visit to "SADANAI" Self Help Group---Mappallaiurani Village. Village with 400 households and 9 SHG groups. In each SHG, 15 women members. These SHGs are a part of the Federation --"Achieve Women Federation". The extender, Mr. Chandrashekhar, had worked with the Federation to introduce the marketing of iodized salt. The concept of working with SHGs was to help the members to earn Rs 1.00 per kg of iodised salt as an income generation activity. Additionally, SHG forum could be used for the universal consumption of iodised salt.

The newly established 9 SHG groups purchased iodised salt at the rate of Rs 2/kg from the parent Federation who buys salt at the rate of Rs 1.50 from an iodised salt trader in the district. The local SHG in turn sells the one kg packs at Rs 3.00/kg to the community. The selling cost is lower than the PDS salt sold at Rs 3.50 per kg and Rs 4.00 at the local retailer. (In fact, I was told, the retailer has reduced the price of salt to Rs 2.75 per kg). It is envisaged that gradually the sale will pick up and the current average earning of Rs 1 per SHG member for the first lot of 250 kgs will continue to increase. Money earned will be collected for 2-3 years and then distributed.

The SHG initiative is new and a total of 250 kg of iodised salt was purchased by the SHGs and of this 200kg was sold under the brand name "Sadanai". The profit is shared by the SHG groups. Unfortunately, iodised salt in the packs on testing by STKs were found to have iodine levels below 15ppm. Therefore immediately we introduced the salt testing kits to women and demonstrated its usage. Discussion were women were trained to use STKs. It was also suggested that the extender talks to the Federation to ensure quality of iodised salt was checked by titration method prior to sale. Moreover, all SHGs are provided with STKs to help in monitoring iodine levels prior to selling or using it.

The initiative is interesting but is not considered very useful action for UNICEF extender to be involved in. The extender could have possibly used his time better for monitoring quality of iodisation at the production level which would significantly influence USI goal since 80% population in TN is consuming iodised salt but only 40-50% consume salt with adequate level of iodine.

C. 22nd August: Field Visit to Salt A Works and Federation of Women

(1) Visit was made to a cooperative "Arumuganeri Salt workers Cooperative Producers and Sale Society Ltd". Arumaliganeri, Chidambaranar District." The society has a total of 291 members, including workers. Discussion was held with the manager, Mr. Shantha Kumar.

The cooperative is a supplier of salt to the PDS shops of three districts through the Tamil Nadu Salt Cooperation (TNSC). The Society is financed by the government with the primary responsibility to produce iodised salt and supply under the government set up of the TNSC. TNSC has a special officer in-charge of looking after societies. Four societies are with TNSC and of these 3 are in Tuticorin. TNSC distributes 1.5 lakh tons of salt to all the districts of TN. Salt supplied by the TNSC includes iodised salt as well as double fortified salt. Salt is sold at the price of Rs 2.50 per kg of powdered crushed iodised salt to PDS.

Salt Dept owns 138 acres of land which has been given to the registered society and of these 100 acres is cultivated. Conventional method of harvesting is used and therefore total common salt produced remains lower than desirable. All common salt produced is iodised. The Arumuganeri Salt works has two salt producing units---both of the units are in one shed --production of the fixed unit is 6 metric tons per hour and of the mobile unit is 5 metric tons per hour. MI has also supplied a potassium iodate unit but this has not yet been put in use. The cost of production is Rs 0.75 per kg. Packaging and transport cost is borne by TNSC. Annual production is 5000 tons per year.

Total requirement of potassium iodate per month is 30 kg per month. Potassium iodate is purchased from Micron Labs in 25kg tins and costs Rs 24,380. Cost of potassium iodate has increased in the past from Rs 22,000 to Rs 24,380 in the recent past. Increasing and fluctuating cost of potassium iodate is a major concern. One kg of potassium iodate is mixed in 20 litres (5% solution) and used for iodizing 20 metric tons of salt. In 2006, the Society received 150 kg of potassium iodate free from MI which was used for a period of 6 months. Last 4 months, no potassium iodate has been received in the last 4 months. The condition of MI was salt should be appropriately. Receiving potassium iodate from MI was welcomed by the Society since it helped in reducing the total cost.

Quality of iodised salt is tested by a chemist who is employed by the Society. Salt is also periodically tested by the Salt Dept. According to the chemist, levels of iodine are tested four times. However, it was disappointing to note that the iodised salt tested by us during the field visit had less than 15ppm of iodine.

The cooperative was questioned on their views in selling in the open market rather than through TN. According to them, marketing through TNSC had the advantage of selling iodised salt to a ready market.

Three areas of concern was expressed--1) increasing production and quality of salt (from the current 96% NaCl to 98% NaCl) harvested by introduction of the "polythene technology" According to the Society manager, in the initial stage only 20 acres of the cultivated land under conventional method of harvesting could be modernized at a total cost of Rs 20 lakhs. The society could bear the partial cost 2) Availability of potassium iodate at a constant cost 3) misuse of PFA Act and a continuous harassment of health dept for bribes in the excuse of checking adherence to the PFA Act.

It was also noted that the IEC materials used at the TNSC were outdated and support could be given for IEC and advocacy activities to members of the society on their responsibility for iodizing salt.

(2) Visit to S.J.Salt --Meeting with Mr J.Natrajan

The salt works has 8 acres of land where 1000 tons of common salt is produced. Also salt is also purchased from others towards production of 40-50 tons of iodised salt per month and 75-80 tons non-iodised salt per month. Produces kurkutch variety of iodised salt (Gurupriya brand) using the drip feed process. This unit has received no free potassium iodate or technical or machinery support. Potassium iodate is purchased by a local agency person, Mr. Santosh. Every month 5 kg of potassium iodate is required. Salt is sold to 20 retailers of the nearby district at the rate of Rs 1.80 per kg with a production cost of Rs 1.25 per kg and the printed MRP being Rs 5.00 per kg. Iodine level is monitored using the ICCIDD spot testing kit. Iodised salt on being tested had over 15 ppm iodine .the unit has not received free potassium iodate to date. The owner appeared organized and took pride in his quality of work. He did not consider it useful to receive potassium iodate free. In fact, he believed that all should benefit by having potassium iodate rate subsidized.

(3) P.S.Selvaraj Nadar and Sons. This is large size refinery which produces free flowing iodised salt (Raja brand) ---50-60tons of iodised salt and 20 tons of industrial high quality

common salt per day. Total 100kg of potassium iodate required per month --purchased from Calibre Chemicals or Mocron Lab at the cost of Rs 24,000 per 25 kg. Iodised salt is machine packed in 500gm and one kg polythene bags with an MRP of Rs 4.50 per half kg or Rs 9.00 per kg.

Interestingly this was the only salt works; I had visited which uses dry mixing method as well had an automatic packing machine. Potassium iodate is therefore not used in solution form.

The refinery had UNICEF supplied kit as well as its own well equipped laboratory. It was not clear why this unit was supplied the lab kit by UNICEF. UNICEF kit was kept in one corner and the various chemical solutions supplied had been used to some extent. It was of concern to note that this unit as well as other units visited had not ever received any guidelines on the frequency of testing salt for iodine level during the production time as well as of a standard method of reporting.

(4) Aruna and Co Iodised salt - the interesting feature of this salt works was that it was categorized as a licensed unit. The family had 108 acres of land on lease from the salt dept. The unit, I visited had 25 acres of land for harvesting salt, Since the land was on lease, access of Rs 0.14/ 75 kg of salt and an assignment fees of Rs 700 /acre/year was paid to the salt Dept. Salt was harvested by both having a special salt bed and without it. The cost of salt accordingly increased---from Rs 20 per bag of 80 kg to Rs 30 per 80 kg bags.

Total production of iodised salt (brand name Diamond Salt) per year was 5000-6000 metric tons. Produced iodised salt by hand spray and heap method---has been doing it for the last 10 years. The salt works had three spray machines, each costing Rs. 1000 and produced locally. The MRP was Rs 5.00 /kg. Potassium iodate purchased from a local merchant at the rate of Rs 1050/kg. This salt unit had received free potassium iodate of 25 kg only once---February 2006.

Salt is marketed to local merchants who fix the price --varies from Rs 20-Rs 40 per 80 kg bag. The unit also supplies common salt to traders for iodisation.

No laboratory facility was attached. This unit had not received the lab kit from UNICEF .Since a set of Lab kit was available, it was agreed to provide him the kit.

Discussion was held to understand the support required for achieving the USI goal. The owner suggested that KIO₃ quality should be checked and certified. Misuse of PFA act for harassing salt iodisation producers was common and this interference by the health dept should be checked since it discourages producers from expanding their business. We were also informed that due to harassment by health sectors, the iodised salt producers were incorrectly labeling salt as “not for edible use” or incorrectly printing substandard salt or adulterated salt. Moreover guidelines could be issued for industrial salt as well printing and packaging.

(5) Visit to Federation “Achieve Women Federation” or “Sadanai”.

The Federation started operating from 21st April 2003. The federation has 65 groups (SHGs) and is considered an NGO by the government. The activities of the Federation were initially

linked to economic activities such as pickling, washing powder, stitching clothes. Purchasing and marketing iodised salt was added only a few months back. The federation in the past one month had purchased 350 kg bundles (25kg per bundle) of salt and has a profit margin of rs 5 per bundle.

Discussion was held with women regarding their views on why iodine was important. Most of the women considered iodine important for preventing goiter. Opportunity was used to inform the women of the wide spectrum of iodine deficiency.

The use of STK was demonstrated to them by testing the salt the Federation had purchased from a local trader, Sopha Salt in Tuticorin. Unfortunately, salt was found to have iodine below 15ppm. The Federation president, Ms Gauri, was requested to return the supply and get it iodised. It was also advised that iodine level is checked by the Federation prior to purchasing any supply.

D. 23rd August: Meeting with Mr. D.Shivakumar, Superintendent Salt Department.

(1) Following is a summary of the discussion.

- a) Labour cost is increasing---salt laborers are shifting to textile industry who pay better and provide a better working environment. This is adversely affecting the small salt producers as well as medium salt producers and iodisation traders who are dependent on availability of labourers.
- b) 23 refineries are in operation. Capacity is much more than the production of iodised salt. Good quality common salt demand is also met by these refineries for industrial purposes. Refineries obtain salt from local salt producers. Increased interest in the establishment of refineries. Small and medium traders are increasingly supplying common salt to refineries rather than iodizing since labour cost is on an increase.
- c) With lifting of zonal scheme, there is a substantial increase in road movement. Only 4 rail rakes used in the last 8 months for moving salt to Orissa. This is also to avoid checking by Salt Dept.
- d) Salt dept has no information on free supply of potassium iodate. There has been no discussion with them. According to them .Mr. Jai Rajan is involved in free distribution. However, there was a call from Jaipur office who had informed them that if there was any such agreement with the Salt dept, the Tuticorin unit will be informed.
- e) Salt dept involvement in checking quality of potassium iodate could be explored.
- f) Price of KIO₃ needs to be stabilised. Five years back it was at Rs 600 per kg.
- g) Subsidy--review implications. Not recommended.

- h) Salt Dept also informed that all licenses regarding manufacture and transport have been withdrawn. Zonal scheme is withdrawn but the Salt Department issues the forms required for rake movement and wagon allocation. It may be noted that only lease continues to be enforced whenever the government land has been leased out for salt harvesting.
- i) Small producers collectively become medium producers and are able to iodise salt. About 120-150 plants in Tuticorin use hand spray (with capacity of 20 litres) method for iodisation. Fig I present an overall scenario of small and medium scale salt producers (licensed and not licensed) and traders. Database needs to be updated and computerized.
- j) The primary traders are 10 “Marwaries” These supply iodised salt to Bihar and West Bengal. Most of this salt moves by rail rakes (2520 tons of salt per rake. Each rake consists of 40 boxes with capacity for 63 tons of salt in each box).The other traders are non-marwaries who depend mainly on road movement and about 3000 tons are transported by them by road. Marwaries transport only 10% of the salt marketed by road.
- k) According to the secretary, Small Scale Salt Manufacturers Association, have 200 members and they are not licensed manufacturers. Of these, about 50-75 are common salt producers cum iodised salt traders and these directly produce and supply iodised salt. About 150 supply common salt to traders and refineries for iodisation. (Fig I).
- l) Small producers need support for checking iodine levels. In this context, the advantages and constraint of mobile labs supplied by UNICEF was discussed. The scope of giving support for monitoring iodine levels is critical and a strategy was proposed by me for consideration where UNICEF agrees to provide the lab support and society commits to pay for the operational support such as a staff with joint function of driver cum lab person (Rs 12,000 per month) as well as the fuel cost (about Rs 10,000 per month). A smaller size of van could be considered so that it is not a heavy vehicle. The details could be worked out by UNICEF in consultation with the Society members and the Salt Dept. During our discussion, the secretary of the Society found this proposal more appealing than free supply of potassium iodate.
- m) The status of usage of lab kit supplied by UNICEF was also discussed. The primary constraints were in weighing salt, ready availability of standard solution ,registers for recording, guidelines for lab testing
- n) The role of extenders to create market for iodised salt through Federation and Self Help Group does not appear to be the best use of consultancy support by UNICEF Extender could provide more useful inputs by ensuring optimum and quality production and movement of iodised salt.

E. Emerging Issues:

- i) Lifting of zonal scheme and its implication on salt movement, especially in north-east needs to be reviewed systematically.
- ii) Problem of labourers will possibly result in small iodised salt producers closing business. For supporting small producers, the scope of forming cooperative of small producers to establish automated refinery to produce free flowing salt for open market or linked to TNSC needs to be explored.
- iii) System to control price and quality of KIO 3 needs to institutionalize.
- iv) Free supply of Potassium iodate and its positive impact and negative results need to be reviewed. Criteria needs to be developed and made transparent.
- v) Guidelines for testing salt for iodine levels needs to be standardized and issued by the Salt Dept. Similarly, the scope of improving usage of UNICEF supply of kits needs to be studied. Constraints on usage need to be overcome. Salt extenders could be more involved in this task.
- vi) The advantages and disadvantages of using hand spray for iodisation needs to be reviewed and guidelines issued to ensure follow up of best practices.
- vii) Increased movement by road required development of a system for monitoring iodine levels. System for this could be developed in consultation with the Ministry of Industry and the Ministry of Consumer Affairs.
- viii) Technical support for production of increased quantity and quality salt could be given to salt producers/harvesters. Support regarding use of polythene bed technology or salt bed technology was mentioned by a few producers.
- ix) Role of Health dept in monitoring PFA Act needs to revisit to avoid harassment to iodised salt traders and manufacturers.
- x) Mapping and sensitization of wholesalers is critical to ensure only appropriately iodised salt is purchased and marketed in non-salt producing states.
- xi) Role of UNICEF extenders needs to be reviewed in the context of the actions required for accelerating production, movement and marketing of iodised salt.
- xii) Messages on importance of iodised salt could be standardized to ensure correct and uniform message imparted.
- xiii) TNSC to be informed of strengthening the system of monitoring so that PDS shops receive only salt with over 15 ppm iodine.

Summary of Emerging Recommendations ---Tamil Nadu Iodised Salt Production

- 1) Promotion of packaged iodised salt for edible purposes. Use of smiling sun logo used for promotion of iodised salt not only on packages but as danglers in shops.
- 2) Explore support for establishment of packaging units to small producers. The problem of packaging under incorrect information has not been resolved for years. The scope of addressing this issue through a consumer group can be discussed with consumer organization and consensus reached.
- 3) Data on Iodised salt production and consumption in Tamil Nadu needs to be segregated in terms of iodised salt with 15 ppm of iodine and below 15 ppm of iodine. This is also evident from the findings presented for 62 branded (non-popular) salt tested by the titration method. Of these brands, 58 had iodine content less than the prescribed level of 15ppm and above.
- 4) System to check whether open salt is being used by households for edible purposes since common salt is sold not only for industry and animal feed but also for enriching the soil around the coconut trees.--1 to 2 kg per tree required every quarter before the yield.
- 5) Salt testing kit is a semi-quantitative tool but can be used effectively to monitor level of iodine in salt and for taking timely action.
- 6) Establishment of a system for monitoring levels of iodine needs a special focus. Such a system could be developed for follow up by various partners --- extenders, FEDCOT and other organization.
- 7) The problems of titration, such as preparation of stock solution and usage of standardized registers, needs to be reviewed with a view to resolve the laboratory problems.
- 8) Production, sale and timely availability of potassium iodate needs to be studied so that there is no hindrance in the supply of potassium iodate and production of iodised salt is not influenced. A joint advocacy by the international partners in India is considered important for controlling the international price of iodine so that there is positive interest in the economic viability of potassium iodate trade and the potassium iodate production units continue to function.
- 9) Free supply of potassium iodate to selected iodised salt producers is causing some ripple in the market. It is important that UNICEF, MI,WFP jointly study the implications of free supply of potassium iodate and a consensus is reached regarding the policy of free supply of potassium iodate , with particular reference to the process and transparency in the selection of beneficiaries as well as in the establishment of a monitoring system.

- 10) UNICEF support to FEDCOT is extended for another two years and a revised plan of action is prepared. The difficult to reach areas are mapped and special attention is directed to reach them.
- 11) Salt wholesalers and middle schools in each district are mapped and a plan of action is prepared to sensitise wholesalers and reach families through school to community approach in a systematic and sustainable way.
- 12) Role of extenders is reviewed with a view to increase focus on establishing an MIS system in the iodised salt producing regions.
- 13) Supply of laboratory kits by UNICEF is reviewed with a view to ensure a system for testing of iodine levels in salt is established and adhered to. Mapping of iodised salt producers with or without laboratory support could be undertaken for identifying selection of units which need laboratory support.
- 14) Recommendations of the rehabilitation of plants are reviewed and UNICEF support finalized at the earliest.

The PIP of NRHM of TN state clearly spells out the activities to be undertaken under the USI programme ----a very useful outcome of the advocacy by Dr Jayanthi Pandian of UNICEF. The NRHM offers the opportunity for acceleration of USI activity in TN. Moreover with the gazette notification in place, there is a high possibility of a good push by the TN government.

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