

### **23. Iodized Salt Program Assessment Tool (ISPAT)**

- a. Manual and instrument (English)

**PARTNERSHIP  
For  
TRACKING COUNTRY PROGRESS  
In  
UNIVERSAL SALT IODIZATION PROGRAMMES**

**Towards the  
  
SUSTAINABLE ELIMINATION OF  
IODINE DEFICIENCY DISORDERS  
BY AND BEYOND THE YEAR 2000**

**A manual for programme managers**

**BY**

**The International Council for Control of  
Iodine Deficiency Disorders (ICCIDD)**

**And**

**The Program Against Micronutrient Malnutrition (PAMM)**

**In collaboration with**

**USAID/ OMNI  
The Micronutrient Initiative (MI)  
UNICEF  
WHO**

**DRAFT: January 1998**

**PARTNERSHIP FOR TRACKING COUNTRY PROGRESS IN UNIVERSAL SALT  
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SUSTAINABLE ELIMINATION OF IODINE DEFICIENCY DISORDERS  
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## Acknowledgements

The authors of this manual would like to thank the sponsoring agencies and organizations for financing the production of this manual. We also would like to thank the government and people of Malawi and USAID/OMNI for working diligently with us, and supporting us, respectively, on field testing the manual. Special thanks go to Foday Lahai, Consultant, Theresa Banda, title, Ministry of Health, and Henry Ndebwe, MOH, and David Chikashu, Ministry of Commerce and Industry, Malawi, for their invaluable assistance with this endeavor. Finally, we would like to thank everyone who provided comments that have helped us improve the manual's contents. to be completed following all field tests—

## Abbreviations

IDD: iodine deficiency disorders  
IEC: Information, Education, and Communication  
KAPB: Knowledge, attitude, practices, and beliefs  
MOH: Ministry of Health  
QA: quality assurance  
regs: regulations

## Introduction

### Global Progress in Universal Salt Iodization

Over the past 10 years, particularly after the World Summit on Children (WSC) held in New York in 1990, considerable progress has been made in implementing universal salt iodisation (USI) programmes in countries affected by iodine deficiency. Twenty-one out of 87 countries for which information is available are now iodizing 90 per cent or more of all salt produced for human consumption. 1 These countries reached the mid-decade goal, that of more than 90 per cent households consuming effectively iodised salt. An additional 14 countries are iodizing between 75 per cent and 90 per cent of all salt. In many of the remaining 52 countries, the infrastructure to produce iodised salt has been established and the proportion of iodised salt consumed could reach or exceed 90 per cent by the year 2000. 1

As a result of post-WSC efforts, altogether, about 2.4 billion people, or 55 per cent of the population of the 87 developing countries with data available, are now obtaining adequate iodine intake through the consumption of iodised salt. 1 The distribution of these populations by region is given in Table 1.

Table 1: Consumption of iodised salt by region

<b>Region</b>	<b>Countries with IDD problem and salt information</b>	<b>Total Population (millions)</b>	<b>Population consuming iodised salt (millions)</b>
Sub-Saharan Africa	33	523 (100%)	298 (57%)
Middle East and North Africa	9	215 (100%)	157 (73%)
South Asia	6	1205 (100%)	711 (59%)
East Asia and Pacific	8	1681 (100%)	807 (48%)
Latin America and the Caribbean	20	461 (100%)	369 (80%)
CEE/CIS and Baltics	11	335 (100%)	87 (26%)
<b>Total countries</b>	<b>87</b>	<b>4420 (100%)</b>	<b>2429 (55%)</b>

Laws and regulations governing salt iodisation have been passed, or are in the final stages, in all but 8 countries in which IDD is recognized as a public health problem. A substantial proportion of the human and financial resources required to achieve universal salt iodisation has been mobilized, including some US \$30 million from external sources during the past five years. Some countries that did not achieve the mid-decade goal will need extra support to enable them to make substantial progress by the year 2000. 1

As we reach the end of the decade, the key future actions in iodine deficiency elimination efforts will be to continue to track progress towards the goal of eliminating iodine deficiency a significant public health problem and sustain the achievements attained.

The manual is designed to assist governments with assessing achievement of their iodine deficiency elimination goals and objectives through their salt iodization programs. The manual concentrates on the program elements necessary for *sustainability* by looking at the systems in place in national programs. In doing so, it focuses on three essential program elements: the product, the process, the progress—

- ◇ Ensuring that all salt for human and animal consumption is iodized according to government standards for iodine content and that quality assurance (QA) mechanisms are in place and are routinely practiced by industry to confirm this—**the product**
- ◇ Maintaining a program that generates political will and financial commitment; ensures communication among government policy makers, public and private sectors, and NGOs; educated its population on the importance of consuming iodized salt to eliminate the risk of iodine deficiency disorders (IDD); and is managed efficiently and effectively—**the process**
- ◇ Measuring iodized salt coverage and the iodine deficiency status of the population—**the progress**

Table 2 provides the criteria recommended by the Joint WHO/UNICEF/ICCIDD Consultation for measuring progress towards the goal of eliminating IDD as a significant public health problem.

2.2

Table 2: WHO Criteria for tracking progress towards eliminating IDD as a public health problem (selected indicators)

Indicator	Goal
<b>1. Salt iodisation</b>	
Proportion of households consuming effectively iodised salt	> 90%
<b>2. Urinary iodine (school children)</b>	
Proportion below 100 ug/1	<50%
Proportion below 50 ug/1	<20%
[Median urinary iodine	≥ 100 ug/1]
<b>3. Thyroid size</b>	
In school children 6 – 12 years age, proportion with enlarged thyroid.	<5%
By palpation	

Biologic measurements alone will not determine the adequacy of the infrastructure that must be in place for elimination efforts to be sustained. Thus, a review also is needed to assess all of the elements that make up a successful program. This approach will allow a determination of whether effective *systems* are in place and followed in such a way that elimination efforts will be both successful and *sustained*.

Governments participating in the 49<sup>th</sup> World Health Assembly in May, 1996, passed a resolution supported calling on national governments to monitor their progress and seek independent evaluation in order to assess progress towards the goal. The Resolution referred to the availability of the International Council for Control of Iodine Deficiency Disorders (ICCIDD) and other NGOs to assist governments in the process. (Annex 1) Hence, this instrument is designed to be useful under the following scenarios:

- ◇ A team composed of internal and external program staff and consultants tracks progress by reviewing existing documents, interviewing key officials and staff, holding focus group discussions, and reviewing available data on iodized salt coverage and iodine deficiency prevalence statistics
- ◇ In addition to the document review and interviews noted above, the team completes an independent representative rapid survey to gather complementary information on various program process indicators as well as coverage and prevalence rates.

Under either scenario, a detailed report of findings with recommendations is prepared and presented to the government and interested agencies and organizations.

This process is designed to identify both successful program elements as well as elements that require strengthening to achieve and sustain elimination goals. By following a standardized program activities can be identified and shared with other programs.

### **How to Use this Manual**

The proposed process follows the model used by WHO for evaluating the Control of Diarrheal Disease Programs. Under this process, a team composed of members from the national program and technical support agencies, together with external experts, assess an array of program elements to evaluate program effectiveness and sustainability.

The review is done using information obtained through record reviews and through structured interviews with various stakeholders, including: government officials, industry representatives, policy makers, CDD experts, educators, agriculturalists, livestock specialists, students, consumers, and others. Information is obtained at the national, district, and local levels through a series of specially designed questionnaires and data collection checklists. These activities are followed by an analysis of the program's status and prognosis for sustainability and, as appropriate, recommendations for strengthening program implementation.

To facilitate the review process, the multi-sectoral IDD program is broken down into a number of components, each of which will be evaluated to form, in the end, an integrated picture of the entire program.

Itemization of program components to be reviewed	
The product:	Raw salt- production/procurement, processing Iodization Packaging and labeling Internal quality assurance Product marketing
The process:	Policy and advocacy The regulatory environment—legislation, regulation, enforcement Program monitoring, including external quality assurance Laboratory Capacity Information, education and communication (IEC), including educational curriculum Management and program administration
The progress:	Program coverage- household and retail iodized salt coverage Prevalence- biologic impact as measured by total goiter rates and urinary iodine in school children

The full review should take approximately 2-4 weeks, depending on the country and program size and complexity. Alternatively, the manual can help guide a more targeted assessment of particular program elements over a shorter period of time.

Budgetary considerations related to the assessment are outlined in the following table. A recent assessment in Malawi, a small country that imports almost all of its salt costs approximately \$ (US).

The assessment team was composed of one external consultant from the United States, another external consultant from West Africa, and two program staff consultants.

Budgeting for the Assessment
<p>The following items should be considered:</p> <ul style="list-style-type: none"> <li>• Communications</li> <li>• International travel and domestic travel to and from field sites (per person)</li> <li>• Field visits and per diem costs (per person)</li> <li>• Document reproduction costs</li> <li>• Supplies</li> <li>• Incidental costs</li> <li>• International and local consultant salary and per diem</li> <li>• Local consultant salary</li> </ul>

### **Maximizing the Benefits of the ISPAT Assessment**

The assessment process can serve multiple purposes. Most obvious is the use of the tool to assess the strengths and weaknesses of the program in order to allow corrections that will result in full achievement and sustainability of programmatic goals. However, the potential benefits of the

assessment process can be far reaching and include the following:

- ◇ Creating an opportunity to meet with high level political leaders to applaud their efforts and reinvigorate their commitment to the program
- ◇ Creating an opportunity to meet with industry leaders to applaud their efforts and reinvigorate their commitment to the program
- ◇ Creating the opportunity for Ministry officials involved in the program to focus almost exclusively on the IDD program for an intensified period of time, thereby reinvigorating their commitment and efforts as well
- ◇ Emphasizing the importance of concentrating on *sustaining* achievements for the coming decades through ongoing activities and monitoring systems development or enhancement

ISPAT Uses
<ul style="list-style-type: none"><li>• Program assessment and recommendations</li><li>• Advocacy with key officials from government, industry, agencies, and NGOs: reinvigoration of commitment and focus on IDD</li><li>• Emphasizing sustainability</li></ul>

### ***Using the Tool and the Assessment Process for Advocacy***

It is suggested that, at the beginning of the process, the team meet with the high level government and supporting agency officials important to the program to brief them on the purposes of the assessment, applaud their efforts to date, emphasize the importance now of sustaining achievements, and otherwise secure their support for the assessment and receptiveness to the recommendations likely to come out of the assessment. This, essentially, serves an advocacy function. Likewise, similar messages should be exchanged with the industry leaders critical to the iodization program, although this can be done during the interviews with industry representatives.

At the conclusion of the assessment process, it is important to debrief with all ministries involved in the program, agency, NGO, key industry officials, and others critical to the program to report on findings and key recommendations, reinforce the positive aspects of the program and, again, emphasize the need to continue efforts and systems to ensure sustainability.

These meetings and positive energy that can be created by an enthusiastic team can make a very important contribution to reinvigorating and concentrating commitment and laying the foundation for the final push of activities that will allow the program to achieve its goals while at the same time concentrate on sustaining them.

### **Suggested Assessment Team Composition**

It is critical to have program implementers from the key involved ministries, and if possible, a key industry representative, to serve as the backbone of the team. Having program implementers serve as the core of the team serves multiple purposes:

- ◇ They have the best knowledge of the program elements and the key individuals necessary for programmatic operation
- ◇ They will be able to see for themselves the strengths of the program along with the areas that need strengthening and be able to determine first hand the best strengthening measures to undertake
- ◇ Policy makers likely will give greater consideration to the recommendations emanating from the assessment because of the participation of key programmatic staff
- ◇ The assessment process by its very nature is a capacity building exercise for all involved in the process, the programmatic staff and the outside evaluators alike

One or two outside consultants also are recommended. If possible, one of the consultants should be from the region (or at least continent) and should have programmatic experience. This will lend credibility to the team. It is suggested that the other consultant be from an external organization (agency, NGO, academia, or other) that has international experience and credibility.

### **Suggested Protocol**

The individual in charge of locally coordinating the assessment should review the instrument, pick the team members in a way that ensures intersectoral collaboration and participation, gather the background documents to the extent possible, and arrange the field visits and interviews. Prior to beginning the interview process, a briefing, as described above, should be held with key representatives of ministries, industry, agencies, NGOs, and others critical to the IDD/salt iodization program.

The instrument should be distributed to all team members prior to beginning the assessment process so that each team member can become intimately familiar with the tool and the process. By going over the explanatory information and the checklists, team members can:

- Assess what information still needs to be gathered
- Determine how to best structure field interviews, including topics to cover, by extracting from the checklists key points to be sure to cover
- Fine tune the schedule and other logistic matters, and

- Begin thinking from the outset how to gather and record information to facilitate the report writing and recommendations at the end of the process.

It will not be advisable or probably even possible to try to fill out the checklists during the interviews. This would be too stilted a process and probably too time consuming.

In selecting field sites and individuals to interview, including consumer or merchant “focus groups” or individuals, it will be necessary to be clear on the objectives of the assessment and the intended use of the data/information. Will the information be used to gain an impression of how the program is working (an assessment) or will there be a need for concrete statistically significant and representative data (an evaluation)? The answer to this will depend on the intended use of the information and the time, staff and other resources available to carry out the assessment or evaluation.

Documents for initial review at the central level
<ul style="list-style-type: none"> <li>• National Development Plan</li> <li>• National Action Plan for Nutrition</li> <li>• Food laws/regulations</li> <li>• Educational curricula</li> <li>• Agency reports</li> <li>• IDD prevalence surveys</li> <li>• Salt situation analysis information including iodized salt production and import records</li> <li>• Program implementation and coverage reports</li> </ul>

Following the central information review process, the team will collect information in the field, at the district and local levels. They will collect data during field visits by reviewing documents and interviewing individuals such as food inspection and enforcement officers, industry representatives, health personnel, teachers, school children, consumers, and others. Additionally, the team will visit production sites, markets, and schools and will observe processes and activities to gather additional information.

Throughout the process, it is recommended that the team meet routinely to discuss the day’s findings, identify and information gaps that need to be filled, and begin to synthesize information obtained to date. Completing the check lists for each program component as the information is gathered, as a group exercise by the team may be a useful way to process the information.

ISPAT Protocol
<ul style="list-style-type: none"> <li>• Select interdisciplinary team members</li> <li>• Gather data and reports</li> <li>• Assess methodology needs: impression of program v. statistically significant and representative data</li> <li>• Arrange field visits and interviews accordingly</li> <li>• Thoroughly review instrument</li> <li>• Hold briefing/advocacy meetings with individuals and organizations critical to the program</li> <li>• Prepare topics or questions for interviews (checklists serve as a comprehensive reference)</li> <li>• Meet routinely as a team to begin synthesizing information and completing checklists as information is collected on components</li> <li>• Draft and finalize report, including clear and concise summary recommendations</li> <li>• Debrief with key individuals and organizations</li> <li>• Disseminate final report to interested organizations and individuals</li> </ul>

<p><b>The Assessment Report</b></p>
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The final report will be important as a means of communicating the findings and recommendations. It should include a short executive summary and clear and concise summary recommendations at the beginning of the report. The remainder of the report may then contain background information and elaboration on the findings and recommendations. It will be important to have the report, or at least the executive summary and summary recommendations, available to distribute at the debriefing meeting at the conclusion of the process. The report then can be more widely distributed to donors, implementers, and others as determined by the program manager.

## **A Suggested Format For Reporting Country Progress**

### **Executive Summary**

Include a brief summary of findings, analysis and recommendations

### **Summary Recommendations**

Identifying who should do what, make the key recommendations for strengthening and sustaining the program.

### **Country Profile**

In this section, a brief summary of information on the country is collected and recorded. It should provide a geographic and administrative description of the country, including demographics, vital health statistics, and basic government organization. A brief description of the health care system in the country should be provided, in the form of tables, figures or diagrams. The summary also should include the estimated health budget, the budget for iodine deficiency elimination programme activities inclusive of the budget for the universal salt iodisation (USI) component. It may be interesting to plot an historic timeline marking significant program activities for the past 10-20 years.

### **Summary of progress with respect to the product**

This section should summarize information on all aspects of salt production/importation. The section should focus on those aspects that pertain to the entire salt industry and should provide details on those areas of industry responsibility that can be improved. Summary recommendations related to the product might be elaborated.

### **Summary of progress with respect to the process**

This section should summarize all elements necessary for the long term continuation of the programme. The focus should be on those elements that are the direct responsibility of the national IDD program, or of other branches of the government. This should include assessment of each element's strengths and weaknesses, with specific suggestions for improvement.

Summary recommendations related to the process might be elaborated.

### **Summary of improvement in iodized salt coverage and iodine deficiency prevalence**

This section should provide a summary of the most current data on household and retail iodized salt coverage, and on the prevalence of IDD. If an independent survey is included, data methods should be described, and a summary presented. The discussion should include a critique of data collection methods, and an assessment of the strength of the coverage and prevalence figures presented: For each summary, reporting templates are provided for the relevant sections.

## **Organization of the Manual**

The manual is divided into four sections: Introduction, Section I: Product, Section II: Process, and Section III: Progress. For each of these, suggestions are made for the methods to use, the types of documents to review, and the individuals and groups to interview. Each section provides suggestions for collecting information at the central level and during field visits. Checklists are provided for guidance on information to collect and also to serve as records of the evaluation. Reporting templates may be useful in tabulating key information. Sample questionnaires, requiring adaptation to the national context, may be useful for guiding focus group discussions for more representative KAPB surveys. Sampling methods are suggested and referenced in the event an independent survey is needed.

Information on making a formal request for an independent evaluation may be found in the ICCIDD Publication: “Partnership of Independent Assessment of Country Progress Towards Achieving the Goal of Iodine Deficiency Disorders (IDD) Prevention, Control, and Elimination by and Beyond the year 2000”.<sup>5</sup>

### **Selected References**

- 1) World Summit for Children - follow up: Mid-decade Review, UNICEF, 1996
- 2) “Indicators for assessing Iodine Deficiency Disorders and their control through salt iodization”. Published by WHO/UNICEF/ICCIDD, WHO/NUT/94.6, 1994.
- 3) “S.O.S. for a Billion – The Conquest of Iodine Deficiency Disorders”, B.S. Hetzel and C.S. Pandav eds. Oxford University Publication. (Second edition), New Delhi, 1996.
- 4) “Introduction to International Council for Control of Iodine Deficiency Disorders”
- 5) “Partnership of Independent Assessment of Country Progress Towards Achieving the Goal of Iodine Deficiency Disorders (IDD) Prevention, Control, and Elimination by and beyond the year 2000”
- 6) “Monitoring Universal Salt Iodization Programmes”, Joint UNICEF – PAMM – MI –

## SECTION I: THE PRODUCT

### **Goals**

To review all aspects of salt production, procurement, or import, processing, iodization, packaging and labeling, storage and distribution by industry.

To observe salt iodisation plants (SIPs) and production procedures, including quality assurance inclusive of equipment, inventory & maintenance, and salt testing.

To review SIP capacity and function, price differentials, and marketing plans.

### **Methods**

- Document review
- Observation of production processes, particularly quality assurance procedures, including SIP laboratory salt testing
- Key informant interviews

### **Documents to review**

- Government, agency, and NGO reports on salt situation (production and import quantity figures, household coverage, brand distribution, and availability of iodized salt)
- Industry non-proprietary records on production, importation and distribution
- Industry records on quality assurance procedures, activities, and corrective action
- Retail records on ordering, costing, and sales/demand
- Standard operating procedures/manuals for industry laboratory methods and performance
- Industry lab assay data and results for various methods performed
- Inventory records (procurement records, reagents, diagnostics, consumable items, etc.)
- Production and lab technician training and performance records
- Industry marketing plans for various geographic regions

### **Key informant interviews/ focus group discussions**

- Discussion with salt producers and importers and potassium iodate importers or producers
- Discussions with industry laboratory personnel (where no official laboratory, talk with staff responsible for QA)
- Industry staff responsible for developing marketing plans
- Discussions with wholesalers and retailers

### **Central level topics**

The major sources of salt for the country: the proportion imported and the distribution of production across large, medium and small producers. (large = more than or equal to 5,000 tons per year, medium = 1,000 - 4,999, and small = less than 1,000)

A salt map sketch that includes the major production and processing sites, major ports of entry for imported salt, and some estimates of market share for the major producers meeting 80% of the national salt needs

The sources of potassium iodate (or iodide, with an explanation of the rationale for using iodide as opposed to iodate), cost, sustainable procurement, inventory, and any barriers to ready availability to processors

Estimated from industry records, the proportion of salt produced that meets government standards and the variability in this quality across the major producers and wholesalers

Quality assurance procedures

The ability (and reliability) of the laboratory at each production site

The ways in which salt is sold (open large containers, smaller packages, labeling, degree of refinement) including general estimates of the relative proportions and any changes in this balance over the past 2-5 years

Marketing efforts by industry and the objectives for the marketing plan for each target audience

Documents on sales objectives, costs, competition, and profit margins for providers. Assess the degree to which the marketing plan addresses these issues

Industry perspective on the issues of concern for the product (package size, labeling, quality); price (degree of subsidization and sustainability of that subsidy, availability to lower income groups); place (obstacles in production and distribution); and promotion (activities directed at availability and toward consumption, approaches to different segments).

The chain of responsibility for controlling production, importation, and sales of iodized salt, including who is responsible, government agencies involved, and relevant incentives, taxes and restriction, from the industry perspective (also under regulatory section)

Constraints to producing, importing, and selling iodized salt

### ***Field assessments***

Each team will visit provincial and local government offices and at least one or two district offices. In addition, the teams will visit production and wholesale sites in their areas and review:

Production capacity and proportion of salt iodized for SIP(s) visited

Salt distribution pattern

Quality assurance procedures at production facilities, recording the type of procedure, frequency,

And confirm use over time.

Constraints to producing, importing, and selling iodized salt

Note: Further information can be found in Chapter 2: Salt Situation Analysis, of the joint UNICEF/PAMM/MI/ICCIDD/WHO publication, “Monitoring Universal Salt Iodization

## THE PRODUCT – CHECKLIST

### Summary data

Estimated salt requirements: population: _____: g/person/day: _____: total estimated need: _____(tons/year); estimated livestock requirement: _____(tons/yr)
Total # iodization units: _____; average age of units: (yrs); # functioning currently: _____; Locally manufactured? Y N Estimated unit cost: _____(US\$); Gov't subsidized? Y N
Iodization method: Spray Dry Mix Other
Estimated potassium iodate requirements: Nat'l K103 requirement: ppm; human requirement: _____ (tons/yr); livestock requirement: _____(tons/yr); total K103: _____(tons); Estimated annual expenditure on K103: _____(US\$); Gov't subsidized? Y N
Estimated salt production capacity: # producers (for 30% of production): _____ avg. capacity: _____; total capacity: _____(tons/year); % of facilities gov't owned: _____
Estimated actual iodized salt production: total production: _____(tons/year) as % of total requirement: _____(%)
If salt imported: % of nat'l requirement imported: _____(%); imported as iodized? Y N No. of importers _____; Identification of the importers who together make up at least 50% of the market

**Information checklist for *central* level assessment** (Note: this information may be collected from various documents and/or in the field during visits to major production facilities)

### *Salt situation analysis*

1. Iodized salt producers/importers are able to meet the nation's tonnage needs:

\_\_\_\_\_ yes \_\_\_\_\_ no

(compare amount produced and imported annually with the determined need; show figures):

2. Overall sales figures demonstrate that there is adequate demand for iodized salt.

\_\_\_\_\_ yes \_\_\_\_\_ no

(compare amount of iodized salt produced and imported with amount sold by producers and importers over past year; show figures):

3. Describe the production, import, and wholesale distribution scheme for iodized salt. (For example, is most salt produced/imported from several large producers/importers? Estimate the number of producers or importers meeting 30% of the national need)

4. Current producers have the capacity (maintained functioning iodization units raw salt and iodate available) to produce and iodate more than 80% of annual national salt needs for human and animal consumption.

\_\_\_\_\_ yes \_\_\_\_\_ no

(Compare capacity based on machine size and raw material availability with 80% of need, as determined above):

5. Currently, producers are actually producing more than 80% of annual salt needs as iodized salt.

\_\_\_\_\_ yes \_\_\_\_\_ no

(Reconcile stated production capacity with estimated sales)

6. If producers lack capacity to iodize 80% of annual salt needs or do not produce that amount, importers are able to fill the gap.

\_\_\_\_\_ yes \_\_\_\_\_ no

(Identify any gaps)

7. Current existing subsidies (provision and maintenance of equipment &/or iodate), if applicable, can be sustained during the current plan (ideally for at least 3-5 years).

\_\_\_\_\_ yes \_\_\_\_\_ no

(Compare amount needed for subsidies with amount budgeted for this purpose):

8. Strategic plans, both national and industry, call for cost sustainability within 5 years.

\_\_\_\_\_ yes \_\_\_\_\_ no

Comments:

9. Comprehensive analysis of consumer preferences has been done, include review of cultural practices, product preferences and reasons for these preferences, fears and concerns, and price considerations, and this information is available to producers.

\_\_\_\_\_ yes \_\_\_\_\_ no

(describe how this information was collected and analyzed):

10. Existing data suggest that marketing objectives (by both government and industry) for consumption are being met, and that both institutional and household consumers have been effectively motivated.

\_\_\_\_\_ yes \_\_\_\_\_ no

(discuss qualitative information on HH use of iodized salt and compare with monitoring data on this and with consumption objectives):

**Information checklist for *field level assessment*** (note: in this case, production sites visited may be in the capital)

***Producer/importer awareness and commitment***

11. Salt producers/importers are aware of IDD, its impact on the population, including workers, and the importance of iodization.

\_\_\_\_\_ yes \_\_\_\_\_ no

(outline number of producers/importers interviewed, their location (urban v. rural) and size (small, medium, or large), the proportion interviewed who are aware, and briefly describe the level of their awareness.

12. Prod&importers are aware of the legal requirements for salt iodization (e.g., mandatory iodization, iodate levels, QA, packaging labeling, etc.)

\_\_\_\_\_ yes \_\_\_\_\_ no

(explanation as above):

13. Producers/importers express a genuine desire to iodize salt and meet iodization standards.

\_\_\_\_\_ yes \_\_\_\_\_ no

(comments):

14. Industry marketing plans define the target audience(s) and have clear objectives for each, including specific segments.

\_\_\_\_\_ yes \_\_\_\_\_ no

(comments):

15. Interviews and focus group information suggests that industry marketing objectives for product availability are being met, and that producers/importers, wholesalers and retailers have been effectively motivated.

\_\_\_\_\_ yes \_\_\_\_\_ no

(show proportion interviewed that were motivated):

16. Producers/importers believe there is adequate consumer demand for iodized salt.

\_\_\_\_\_ yes \_\_\_\_\_ no

(show proportion of producers interviewed who believe there is adequate demand):

***Laboratory and quality assurance issues***

17. *Producers* have rapid salt test kits available to them and know how to and do use them correctly.

\_\_\_\_\_ yes \_\_\_\_\_ no

(Show number of kits ordered and distributed to producers by government and agencies, proportion of producers interviewed/observed who have access to kits, and proportion that use them correctly):

18. *Importers* have rapid salt test kits available to them and know how to and do use them correctly.

\_\_\_\_\_ yes \_\_\_\_\_ no

(explanation as above):

19. *Large scale* producers/importers have titration equipment available and know how to use and do use it correctly, including QA of the equipment and titration procedures.

\_\_\_\_\_ yes \_\_\_\_\_ no

(show proportion of large scale producers/importers interviewed/observed that have titration equipment and use it correctly; if government or agencies subsidize this equipment, show figures from their records):

20. Standards for internal quality assurance by producers/importers are defined and understood by the staff of the large scale producers/importers.

\_\_\_\_\_ yes \_\_\_\_\_ no

(show proportion of large producers/importers interviewed that have written QA procedures and trained staff to carry them out):

21. Standards for internal quality assurance by producers/importers are defined and understood by small and medium scale producers/importers

\_\_\_\_\_ yes \_\_\_\_\_ no

(show proportion of small-medium scale producers interviewed that have written QA procedures and trained staff to carry them out):

22. Producers' laboratories generally obtain sufficient reagents/diagnostic kits in order to perform required testing in a timely fashion.

\_\_\_\_\_ yes \_\_\_\_\_ no

(describe any recurring problems):

23. Laboratory staff have adequate levels of training and expertise to undertake the tasks expected of them.

\_\_\_\_\_ yes \_\_\_\_\_ no

(describe how often training occurs, what is covered, who attends, the level of supervision, etc.):

24. Producers periodically validate mixing procedures.

\_\_\_\_\_ yes \_\_\_\_\_ no

(show proportion of producers interviewed/observed that routinely validate mixing procedures; comment on the size of the producers that typically do and do not do this, how often they validate mixing procedures; etc.):

25. Routine lot or batch testing of salt is being performed during production and results are recorded (and available for inspection).

\_\_\_\_\_ yes \_\_\_\_\_ no

(explanation as above):

26. Review of production QA records reveals that random salt testing by producers confirms presence of adequate amounts of iodine in salt currently being processed.

\_\_\_\_\_ yes \_\_\_\_\_ no

(explanation as above):

27. Producers routinely inspect equipment and replace parts (spray nozzles for example) as indicated.

\_\_\_\_\_ yes \_\_\_\_\_ no

(explanation as above):

28. Review of QA records demonstrates consistency of data collection analysis and prompt (before the next batch) correction of problems as they are discovered.

\_\_\_\_\_ yes \_\_\_\_\_ no

(show proportion of producers interviewed/observed that timely review records and take prompt corrective action):

29. Routine lot or batch testing of salt is being performed at import and results are recorded (and available for inspection).

\_\_\_\_\_ yes \_\_\_\_\_ no

(explanation as above):

30. Producers/repackers use proper packaging materials (according to legal requirements).

\_\_\_\_\_ yes \_\_\_\_\_ no

(show proportion packages inspected that have proper packaging and show government inspection figures of number of sample found to not be properly packaged):

31. Labels on packages contain adequate and accurate information (e.g., name of producers, lot/batch no., potassium iodate in ppm, or mg/kg, expiry date, and other information required by law/regs).

\_\_\_\_\_ yes \_\_\_\_\_ no

(show proportion of package inspected that are properly labeled and show government inspection figures related to labeling, as above):

32. Iodized salt is stored properly before it is distributed (e.g., no exposure to excess heat, direct light, moisture, no excess storage time, etc.).

\_\_\_\_\_ yes \_\_\_\_\_ no

(describe typical storage conditions and time and show proportion of those visited that store iodized salt properly):

33. Packaged salt and storage areas are periodically inspected as part of QA prior to distribution

\_\_\_\_\_ yes \_\_\_\_\_ no

(show proportion of producers/importers interviewed that routinely inspect packaging and storage areas):

34. Iodized salt is distributed on a first in first out basis at major production sites.

\_\_\_\_\_ yes \_\_\_\_\_ no

(show proportion of those visited that follow FIFO principle):

35. Producers are able to obtain iodization equipment at an affordable cost.

\_\_\_\_\_ yes \_\_\_\_\_ no

(show proportion of producers interviewed that find equipment affordable and include government subsidy information):

36. Producers are able to obtain potassium iodate at an affordable price and on favorable terms (e.g., not taxed as a drug).

\_\_\_\_\_ yes \_\_\_\_\_ no

(explanation as above):

37. Producers maintain adequate stocks of materials, including potassium iodate and packaging.

\_\_\_\_\_ yes \_\_\_\_\_ no

(show proportion of those interviewed that estimate that their stocks are adequate and who have never run short):

38. Spot testing on site during interviews confirms the presence of an adequate range of iodine in the salt.

\_\_\_\_\_ yes \_\_\_\_\_ no

(show proportion of tests performed yielding a positive result):

39. Overall comments

**Persons met/interviewed and documents reviewed**

List names, title/occupations, and location (by city or village) of all persons interviewed

List all documents reviewed

<b>SECTION II: THE PROCESS</b>
--------------------------------

**Goals:** To review IDD Elimination Programme activities related to policy and advocacy; legislation, regulation and enforcement; monitoring and evaluation; information, education and communication (IEC); and overall program management.

To include in the review overall program quality assurance, including government laboratory sufficiency and proficiency, and district and community activities.

To review the knowledge, attitude, practice and behaviour (KAPB) regarding iodine deficiency disorders (IDD) of stakeholders, including health personnel, salt producers, wholesalers and retailers, teachers, agricultural workers, administrators, NGOs and consumers.

**Introductory note:**

The overall process of implementing a national iodine deficiency elimination program, with salt iodization as the primary intervention, is complex. The process involves many sectors, and includes the entire spectrum from political manoeuvring to technical laboratory quality assurance. Although all program elements are interdependent, to facilitate tracking progress, the program activities are separated into the following general categories for review:

Policy and advocacy  
The regulatory environment: legislation, regulation, enforcement  
Program monitoring  
Laboratory capacity  
Information, education and communication (including educational curricula)  
Management and program administration

This manual suggest review mechanisms for each category, and provides checklists and sample questionnaires. The rationale for the level of detail in these checklists is to provide adequate data which, in the aggregate, describe the program's strengths and weaknesses. From these, recommendations for improvement can be made.

**A. POLICY AND ADVOCACY ISSUES**

***Methods***

- Document review
- Field assessments
- Key informant interviews

***Documents to review***

- National plan for nutrition and National Plan for Iodine Deficiency Elimination
- Health/nutrition budget and IDD budget
- Advocacy documents

***Key informant interviews/focus group discussions***

- Interviews with officials in the Ministry of Health, Industry, Education, and other relevant ministries

- Discussion with Program Manager and staff
- Discussions with industry representatives (production, import, wholesale and retail)

***Central level topics to cover***

Plans for and implementation of national advocacy activities should be reviewed to be sure that they target all relevant public and private officials, deliver the appropriate messages (e.g., subclinical and socio-economic effects), and are ongoing. The national plan, including resource allocation, should be examined to assess the prominence given to IDD interventions and financial commitment.

Ascertain the degree to which advocacy has been effective in gaining awareness and support at a serious political level outside the Ministry of Health. The inclusion of IDD intervention in laws and regulations, educational curricula, and other national documents will indicate the degree and effectiveness of advocacy efforts. Determine the degree to which the private sector has been engaged to participate in elimination efforts.

***Field assessments***

Review plans for and implementation of provincial, district and local level advocacy activities to be sure they target all relevant public and private officials, deliver the appropriate messages (as above), and are ongoing.

## The Process: Policy and Advocacy Issues Checklist

### *Summary Data*

Highest level of *ongoing* commitment: \_\_\_\_\_ (position)

Date of most recent national advocacy event \_\_\_\_\_ (MM/DD/YY)

Participant profile at advocacy events \_\_\_\_\_  
\_\_\_\_\_

Key sectors committed: \_\_\_\_\_  
\_\_\_\_\_

District or local advocacy events: Y N

### *Information checklist for central and field level assessments*

1. There is a plan and ongoing activities for creating awareness of IDD, its impact, and interventions, along with commitment to addressing the problem among high level political leaders, including the Head of State, Ministry of Health, Ministry of Industry, Ministry of Education, other relevant ministries.

\_\_\_\_\_ yes \_\_\_\_\_ no  
(Comments):

2. Awareness activities emphasize mental impairment, scholastic performance, human and livestock productivity as well as the socio-economic consequences of IDD.

\_\_\_\_\_ yes \_\_\_\_\_ no  
(Comments):

3. There is a similar plan and activities targeted toward members of the law-making body.

\_\_\_\_\_ yes \_\_\_\_\_ no  
(Comments):

4. There is a similar plan and activities targeted toward industry representatives (producers, importers, wholesalers and retailers)

\_\_\_\_\_ yes \_\_\_\_\_ no  
(Comments):

5. The Health/Nutrition budgets in the current plans reflect an adequate financial commitment to addressing IDD.

\_\_\_\_\_ yes \_\_\_\_\_ no

(compare amount allocated to amount estimated as needed in plan, and include historical progression if available):

6. There have been significant attempts to communicate with the private food industry about micronutrient goals and actively engage it in iodized salt production, marketing, and distribution efforts.

\_\_\_\_\_ yes \_\_\_\_\_ no

(describe communications activities):

7. There has been a national advocacy event within the past 12 months.

\_\_\_\_\_ yes \_\_\_\_\_ no

(describe who attended, by title or affiliation):

8. High level government officials and/or politicians have mentioned IDD prevention in speeches/addresses within the past 12 months.

\_\_\_\_\_ yes \_\_\_\_\_ no

(give titles of who has made such mention):

9. There are plans for ongoing national advocacy events.

\_\_\_\_\_ yes \_\_\_\_\_ no

(Comments):

10. There has been at least one advocacy event at the district and local/community levels for each district and community.

\_\_\_\_\_ yes \_\_\_\_\_ no \_\_\_\_\_ planned

(Comments):

11. Overall comments:

**Persons met and documents reviewed**

List names, titles/occupation, and location (by city or village) of all persons interviewed

List all documents reviewed

## **B. THE REGULATORY ENVIRONMENT: Legislation, regulation, enforcement**

### ***Methods***

- Document review
- Key informant interviews

### ***Documents to review***

- National food control and salt iodization legislation and regulations
- Provincial and local legislation/ordinances and regulations, as applicable
- Inspection and enforcement records
- Customs records
- National IDD Program Plan

### ***Key informant interviews/focus group discussion***

- Foods standards officer(s) at national, provincial, district and local levels
- Inspection and enforcement officer(s) at national level, and provincial, district and local levels
- Customs officials
- IDD Program Manager
- Provincial or district program officers
- Industry representatives (production, wholesale and retail), trade associations
- Representatives of consumers' associations

### ***Central level topics to cover***

Review national legislation and regulations to see that they contain essential elements (as illustrated in the checklists). If there is no national legislation covering salt iodization, review/discuss plans and time frame for passage of national legislation and regulations.

Review records and interview personnel on matters related to importation of salt and potassium iodate to assess both inspection/ enforcement and the tax/tariff environment.

Interview inspection officers and government officials in charge of enforcement to determine whether the government has adequate financial and human resources to inspect and enforce legal requirements and whether inspection and enforcement officers have received adequate training and instruction. Review court and ministry enforcement records to assess the effectiveness and consistency of the government's enforcement actions. Determine whether there are political barriers to enforcement, and if there are, how they can be minimized (such as by placing enforcement authority elsewhere, relying on consumer activism, etc.)

### ***Field Assessments***

Evaluate provincial level laws and regulations for essential elements and consistency with existing or proposed federal legislation.

Examine the frequency and quality of inspections and effectiveness of enforcement, including identification of problems with enforcement.

Obtain private sector perspective (opinion) on the legal/regulatory environment, problems, and suggestions for solutions.

## The Process: The Regulatory Environment: Legislation, regulation, enforcement checklist

### *Summary data*

Iodization mandated by law/regs? Y N	Date of enactment _____
Iodization levels established: <u>ppm</u> @ production/import; <u>ppm</u> @ wholesale; <u>Ppm</u> @ retail	
Packaging and labeling standards established? Y N	
Inspection and enforcement procedures and responsibilities outlined and assigned? Y N	
Regulatory environment acceptable to industry? Y N	
QA by industry required by the law/regulations and routinely practices N	

### *Information checklist for central assessments*

#### *National legislation*

1. National law or regulations make iodization of all salt intended for human or animal consumption mandatory.

\_\_\_\_\_ yes      \_\_\_\_\_ no      \_\_\_\_\_ planned  
(comments):

2. The law empowers the MOH or other ministry to set the standards for iodized salt in rules and regulations or other form of subsidiary legislation (or if the law itself sets the standards, the levels of potassium iodate are appropriate)

\_\_\_\_\_ yes      \_\_\_\_\_ no  
(comments, show levels required and compare to WHO/UNICEF/ICCIDD recommendations for levels):

3. The law addresses packaging and labeling requirement generally.

\_\_\_\_\_ yes      \_\_\_\_\_ no  
(comments):

4. The law requires producers and importers to conduct routine quality assurance activities.

\_\_\_\_\_ yes      \_\_\_\_\_ no  
(comments):

5. The ministry is given broad inspection and investigation powers.

\_\_\_\_\_ yes      \_\_\_\_\_ no  
(state name of ministry responsible):

6. The law provides for a broad range of penalties for noncompliance (e.g., fines, adverse publicity, license suspension/revocation, removal of product from the market)

\_\_\_\_\_ yes      \_\_\_\_\_ no  
(describe penalties available):

7. The law contains some type of incentives (such as tax exemptions) for producers and importers.

\_\_\_\_\_ yes      \_\_\_\_\_ no  
(describe penalties available):

8. The law requires licensure or registration of salt producers, importers, and retailers.

\_\_\_\_\_ yes      \_\_\_\_\_ no  
(comments):

9. Imported iodized salt is not taxed at an unfavorable rate, nor is potassium iodate, (e.g., as a drug at a higher rate).

Imported salt      \_\_\_\_\_ yes      \_\_\_\_\_ no  
Potassium iodate      \_\_\_\_\_ yes      \_\_\_\_\_ no  
(comments):

***National regulations***

10. The regulations implementing the law set out the specific standards for salt ioditation, including appropriate levels of potassium iodate at production, import, wholesale, and retail.

\_\_\_\_\_ yes      \_\_\_\_\_ no  
(comments):

11. The regulations specify appropriate packaging materials to be used for packaging iodized salt (e.g., polypropylene or other non-porous material (lined with high density polyethylene), and establish labeling requirements (e.g., including manufacturer's license number, date of manufacture, lot/batch no., level of KIO<sub>3</sub> in ppm or mg/kg, expiration date)

Packaging ☐ yes ☐ no

Labeling ☐ yes ☐ no

(comments, including description of label requirements):

12. The regulations specify the requirements for storage of iodized salt (e.g., avoidance of direct light, excessive heat, moisture, etc.)

☐ yes ☐ no

(comments):

13. The regulations require *producers* and/or *importers* to engage in routine quality assurance and to keep records of QA activities.

Producers ☐ yes ☐ no

Importers ☐ yes ☐ no

(comments):

14. The regulations require *retailers* to engage in routine quality assurance and to keep records of QA activities.

### ***Inspection and enforcement***

15. The governmental unit charged by law with inspecting and enforcing legal requirements for foods conducts routine and periodic inspections of salt *producers/importers and retailers*

Producers/importers ☐ yes ☐ no

Retailers ☐ yes ☐ no

(describe how often, on an annual basis for each):

16. Inspections are unannounced.

☐ yes ☐ no

(comments):

17. Imported potassium iodate is routinely inspected upon entry into the country.

☐ yes ☐ no

(comments):

18. The lines of authority for inspections and enforcement are clearly understood by central level staff and officers on the front line.

\_\_\_\_\_ yes \_\_\_\_\_ no

(describe who is responsible for each inspections and who is empowered to take enforcement action and show proportion of those interviewed with clear understanding):

19. There is an adequate number of trained staff to conduct routine and periodic inspections of slat producers, importers, and retailers and they have adequate resources (e.g., forms, transport to inspection sites, etc.)

\_\_\_\_\_ yes \_\_\_\_\_ no

(compare staff available to the number needed to conduct yearly inspection of every producer and importer and a random sample of retailers, and describe training):

20. Food/salt samples taken by inspectors are sent to government-approved labs and analyzed in a timely fashion.

\_\_\_\_\_ yes \_\_\_\_\_ no

(state what the time period typically is):

21. Samples are handled in accordance with legal requirements so they can be used as evidence in enforcement proceedings.

\_\_\_\_\_ yes \_\_\_\_\_ no

(compare typical handling with the legal requirements for handling):

22. When noncompliance with legal requirements is found, the government consistently takes enforcement action, within the timeframe determined by the law.

\_\_\_\_\_ yes \_\_\_\_\_ no

(show how many enforcement actions were taken over past 12 months; state whether anyone is given favorable treatment and under what circumstances):

23. The majority of enforcement actions undertaken are upheld by the court/administrative body that hears the action.

\_\_\_\_\_ yes \_\_\_\_\_ no

(show proportion of actions overturned, describe why they were overturned, and give timeframe for process):

24. There are no major constraints (such as political constraints, corruption, staff availability...) that prevent taking effective enforcement actions.

\_\_\_\_\_ yes \_\_\_\_\_ no

(describe any constraints):

25. Enforcement actions taken seem to have the effect of deterring noncompliance in the future.

\_\_\_\_\_ yes \_\_\_\_\_ no

(show proportion of industry reps. interviewed that feel that they will be sanctioned if they violate the law, the number of repeat offenders):

***Information checklist for field assessments***

***Provincial/local laws/regulations***

26. Any provincial or local level laws or regulations are consistent with the national law and regulations and contain the essential elements described above.

\_\_\_\_\_ yes \_\_\_\_\_ no  
(comments):

***Inspection and enforcement information***

27. There is an effective mechanism for reporting suspected noncompliance with legal requirements (both to the government at any level and from the local to the central level).

\_\_\_\_\_ yes \_\_\_\_\_ no  
(describe the mechanism):

28. Enforcement is effective at the local level.

\_\_\_\_\_ yes \_\_\_\_\_ no  
(describe the strengths and weaknesses):

***Industry perspective on the legal environment***

29. Producers and retailers express a sincere desire to comply with legal requirements.

\_\_\_\_\_ yes \_\_\_\_\_ no  
(show proportion of those interviewed that express this desire):

30. Industry representative understand the legal requirements and believe the law and regulations establish appropriate requirements and standards that they can meet.

\_\_\_\_\_ yes \_\_\_\_\_ no  
(show proportion that have this belief; describe any problems identified):

31. Industry representatives believe the inspections system and sanctioning process provided by law are fair and effective.

\_\_\_\_\_ yes \_\_\_\_\_ no  
(show proportion interviewed that believe this):

32. Industry representatives believe that government laboratory results are reliable.

\_\_\_\_\_ yes          \_\_\_\_\_ no

(show proportion of those interviewed that believe this):

33. Industry representatives believe they should be provided with additional incentives.

\_\_\_\_\_ yes          \_\_\_\_\_ no

(describe desired incentives):

34. Industry representatives believe that there are no provisions that act as a disincentive to iodizing salt.

\_\_\_\_\_ yes          \_\_\_\_\_ no

(describe relevant provisions):

35. Consumers are empowered under the law to take action, either administratively or directly in court, when they purchase salt that does not meet legal requirements.

\_\_\_\_\_ yes          \_\_\_\_\_ no

(describe any actions taken by consumer groups):

36. Industry representatives had significant input into the development of the national/local law(s) and regulations.

\_\_\_\_\_ yes          \_\_\_\_\_ no

(describe opportunities for input):

37. Overall comments:

#### **Persons met and documents reviewed**

List names, titles/occupations. And location (by city or village) of all persons interviewed:

List all documents reviewed:

### **C. PROGRAM MONITORING**

(Note: “Monitoring” as used in this manual, is the periodic review of program components to ensure proper programme functioning. Program monitoring includes government inspection functions and uses inspection information. The distinction is that monitoring is an internal review process by the government to assess its salt iodization program while inspections are used to examine industry compliance with legal requirements and sanction noncompliance. Much of the information needed here is collected in reviewing production and distribution. Inspection and enforcement functions are covered under the regulatory environment review.)

#### **Methods**

- Document review
- Selective observation of production quality assurance procedures
- Key informant interviews

#### **Document to review**

- Documents pertaining to monitoring of nation program
- Industry internal quality assurance records
- Survey reports on coverage, household salt usage, and retail shop availability of iodized salt.

#### **Key informant interviews/focus group discussions**

- Interviews with government staff at national, district, provincial and local levels responsible for monitoring plan (including lab personnel)
- Interviews with production quality assurance staff
- Discussions with retail shop owners
- Discussions with heads of households or representatives of women's or consumer groups on awareness

#### **Central level topics to cover**

Review all government records pertaining to quality assurance of iodized salt, noting the frequency of monitoring, methods used for testing, staff deployed for these tasks, training materials, and use of monitoring information. This should include a description of the various ministries involved and the responsibilities of each.

Review reports on household coverage surveys, availability in retail shops, cultural preferences for alternative sources of salt, and patterns of consumer demand.

Review reports on other elements of the national monitoring plan, including provision of services, utilization of services, coverage of education efforts, advocacy, and impact.

#### **Field assessments**

Describe the role in monitoring for staff at the district, provincial and local levels, including whether there is routine salt testing, whether salt test kits are available, and the effectiveness of data aggregation, analysis and reporting.

Review QA procedures at production facilities and record the type of procedure, frequency, and confirm use over time. This is done in conjunction with the production review.

Review monitoring record keeping and use of the data collected.

#### **The Process: Program monitoring checklist**

##### **Summary data**

Monitoring system in place?	Y	N	Comprehensive?	Y	N	
Type of data?	Qualitative?	Y	N	Quantitative?	Y	N
Monitoring information is shared in a timely manner among relevant sectors responsible for program implementation and policy development?						
				Y	N	

#### **Information checklist for central assessments.**

1. A government monitoring strategy exists and is documented.

\_\_\_\_\_ yes      \_\_\_\_\_no

(comments):

2. All program components are monitored by the government.

\_\_\_\_\_yes \_\_\_\_\_no

(list any components not monitored along with any reason why they are not):

3. The monitoring strategy describes the responsibilities of each ministry and specific job descriptions for those performing the monitoring at each level.

\_\_\_\_\_yes \_\_\_\_\_no

(comments):

4. There are adequate human resources for the government to perform routine program monitoring.

\_\_\_\_\_yes \_\_\_\_\_no

(show number of staff involved in monitoring and describe comprehensiveness of the monitoring; comment on whether staff are adequately trained to perform monitoring):

5. Monitoring data are communicated in a timely manner to the program staff that need to take corrective action and program manager.

\_\_\_\_\_yes \_\_\_\_\_no

(describe the flow of monitoring information, the timeliness of dissemination of the information, and whether the information is used to make program adjustments):

6. Program monitoring is conducted periodically and frequently enough to properly assess program activities and make corrections in programming as indicated.

\_\_\_\_\_yes \_\_\_\_\_no

(comments):

#### **Information checklist for field assessments**

7. The government monitoring strategy addresses wholesale and retail level monitoring in addition to production and import level monitoring.

\_\_\_\_\_yes \_\_\_\_\_no

(comments):

8. Provincial and district level staff are aware of their responsibilities in the monitoring plan and are performing them.

Provincial \_\_\_\_\_yes \_\_\_\_\_no

District \_\_\_\_\_yes \_\_\_\_\_no

(comments):

9. Local level staff are aware of their responsibilities in the monitoring plan and are performing them.

\_\_\_\_\_yes \_\_\_\_\_no

(comments):

10. Monitoring records demonstrate salt testing (using simple testing kits) at the retail and/or household level (including through school testing).

\_\_\_\_\_yes \_\_\_\_\_no

(comments):

11. The government has enlisted NGOs and consumers to assist with monitoring activities where there are inadequate resources allocated for government monitoring.

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

12. Monitoring records show that wholesalers are aware of salt iodization procedures, stability, and the importance of rotating stock.

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

13. Monitoring records show that there is no evidence of stock stagnancy (stored more than 6 months), improper conditions (wet, humid, extremely hot), or lot handling procedures (torn bags) suggesting iodine losses.

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

14. Monitoring records show that retailers are aware of the importance of iodized salt and stock only iodized salt for human or animal consumption.

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

15. Overall Comments:

#### **Persons met and documents reviewed**

List names, titles/occupation, and location (by city or village) of all persons interviewed.  
List all documents reviewed.

### **D. LABORATORY CAPACITY**

#### **Methods**

- Document review
- Laboratory site visits: assessment/observation of operations at both industry and government laboratory sites
- Key informant interviews

#### **Documents to review**

- Standard Operating Procedures/manuals for all methods performed at industry and government laboratory sites.
- Assay data and results for various methods performed
- Quality control (QC charts (internal) for all assays run
- External QC program participation results
- Detailed QA records (including instrumentation checks, collection/sample integrity, storage conditions, etc.)

- Inventory records (procurement records, reagents, diagnostics, consumable items, etc.)
- Technician training and performance records

### **Key informant interviews**

- Interview with director of institution containing the government laboratory
- Discussions with iodine laboratory manager and technicians
- Discussions with IDD program manager and other MOH officials
- Discussions with donor agency representatives
- Discussions with industry laboratory personnel (where no official laboratory, talk with staff responsible for QA)

### **Central level topics to cover**

Determine the ability (and reliability) of the laboratory or laboratories officially identified (by law) to provide analytical services for the national program. Go through similar procedure at production sites.

Ascertain the relationship between the laboratory, it's host institution (e.g. government lab, university, hospital, etc.) and the government IDD program.

Gain an impression of how the laboratory is perceived by those with the laboratory itself and those using or contracting it's services. How do outsiders (e.g. program managers, MOH and donor officials) view the laboratory's role, the quality of its work, and the level of support they need to do the job? How do those within the laboratory view these same issues? Ascertain where critical and divergent perception gaps might exist and reasons why.

Determine how, and to what degree the laboratory is supported (financially, programmatically, managerially) in doing it's IDD work.

Ascertain the quality, integrity, and timeliness of all data produced by the laboratory. Careful review of documentation and records must be made to ensure essential quality assurance and control practices are routinely employed.

Summarize the functions/services that the laboratory presently performs and detail the main barriers and obstacles that limit the quality or productivity of the laboratory.

Where provincial, as well as central laboratory services are employed, outline their role and how the central and provincial laboratories relate to and support each other's activities.

### **Field assessments**

Both central and provincial laboratories should be visited for on-site assessments. Where possible, observe actual laboratory functions and operations being conducted at the time.

Considering the points discussed above and the checklist questions provided in the appendix, interview the various laboratory staff and non-laboratory officials.

During industry visits under Production review, assess laboratory capacity as is done with government laboratories.

## The Process: Laboratory Capacity Checklist

### Summary data

Laboratory present? Central (# _____) Provincial (# _____)
Laboratory quality assured? Y N
Laboratory has sufficient resources (human, equipment, materials)? Y N
Laboratory functions in an integrated fashion with other IDD programs operations and management? Y N

### Information checklist for central assessments

1. Laboratory analysis is seen by the government as key component in monitoring and verifying progress of national IDD intervention programs.

\_\_\_\_\_yes \_\_\_\_\_no

(comments):

2. Laboratory capacity currently exists, at least at the central level, to perform some type of indicator analysis for IDD.

\_\_\_\_\_yes \_\_\_\_\_no

(describe the types of analysis actually performed and what lab personnel say they are comfortable performing):

3. Government-approved laboratory facilities seem appropriate in terms of their location, organizational affiliation, and expertise.

\_\_\_\_\_y \_\_\_\_\_no

(describe the accessibility of these labs to the government, whether there is any potential conflict of interest, etc.):

4. Adequate human resources and funds are being provided in order for laboratories to achieve their expected functions.

\_\_\_\_\_yes \_\_\_\_\_no

(describe budget and staff allocated for lab and compare to what is needed):

5. Comparing the view of people within the laboratory to those outside the laboratory, no major differences exist in the perceived role, level of support needed, and importance of the laboratory.

\_\_\_\_\_yes \_\_\_\_\_no

(comments):

6. The quality, reliability, and timeliness of data produced by the laboratory is well-established.

\_\_\_\_\_yes \_\_\_\_\_no

(describe whether there have been any major problems):

7. The laboratory seems to function in an integrated fashion with other IDD program operations and management.

\_\_\_\_\_yes      \_\_\_\_\_no

(describe whether the lab has a role in survey design, what program information is shared with the lab etc.)

### **Information checklist for field assessments**

#### **Laboratory Capacity and Support**

8. Which of the following tests does the laboratory perform: Urinary iodine, TSH serum, TSH blood spot, TR, Thyroglobulin, salt iodine by titration? (circle all that apply)

9. For each of the methods selected above how many tests are performed annually (approximately) by the laboratory?

\_\_\_\_\_ # of tests.

10. All instrumentation is currently in good working order.

\_\_\_\_\_yes      \_\_\_\_\_no

(describe any recurring problems experiences as well as any difficulty in maintaining or repairing equipment):

11. The laboratory is supplied with reliable, basic services, such as clean water, electricity, heating/cooling etc.

\_\_\_\_\_yes      \_\_\_\_\_no

(describe any problems that exist and what attempts have been made to correct them as well as any difficulties in correcting):

12. The laboratory generally obtains sufficient reagents/diagnostic kits in order to perform required testing in a timely fashion.

\_\_\_\_\_yes      \_\_\_\_\_no

(describe any recurring problems):

13. There are no major barriers faced by the laboratory with regard to importation/acquisition of commercial reagents, diagnostics or supplies from outside the country.

\_\_\_\_\_yes      \_\_\_\_\_no

(describe any barriers and any attempt to overcome them):

14. Adequate funds are available for maintenance, repair, or spare parts for instrumentation and equipment.

\_\_\_\_\_yes      \_\_\_\_\_no

(comments):

15. Given current levels of support (financial/human resources) expectations placed on the laboratory seem realistic, especially in terms of the analysis time, type of testing expected, and the volume of samples to be processed.

\_\_\_\_\_yes      \_\_\_\_\_no

(describe whether there is any backlog):

16. There is adequate communication between the laboratory manager/staff and the national IDD program and other MOH officials.

\_\_\_\_\_yes      \_\_\_\_\_no

(describe the frequency and types of communications)

17. The laboratory is actively involved with other aspects of the national IDD program plans, especially planning surveys, sample collection, and shipping requirements, and preparing reports using survey sample results.

\_\_\_\_\_yes      \_\_\_\_\_no

(comments):

### **Laboratory Quality Assurance**

18. A comprehensive quality assurance (QA) program has been developed, explained and is used by all laboratory staff members. (Note: This involves more than simply running some QC samples,. AQ includes management issues, decision making, adequacy of staff training, correct documentation, method validation, performance protocols, inventory records/control, instrumentation/equipment checks, determination of quality of samples collected and received, sample flow in the lab (i.e. time required and procedures used for receiving, recording, storing, analyzing and reporting sample results):

\_\_\_\_\_yes      \_\_\_\_\_no

(assess the overall lab program and describe any areas not covered in QA planning and implementation):

19. Instruments and equipment are regularly checked for performance, accuracy, validity, etc. (note: ask for copies of instrumentation check results, calibration tests, performed and by whom, etc.):

\_\_\_\_\_yes      \_\_\_\_\_no

(describe frequency of checks and quality of results obtained):

20. The laboratory has well-written detailed standard operating procedures (or manual) for all methods.

\_\_\_\_\_yes      \_\_\_\_\_no

(describe how useful lab staff find it):

21. Key documentation is well organized and recorded. (Note: Includes print copies of results of all individual assays run for each method, log of samples received/results obtained. QC results for each assay, inventory and ordering details, notes on quality of samples sent to the laboratory, evidence that samples are being correctly stores (e.g. refrigerator/freezer temperature charts/ sample database management, etc.)

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

### **Quality Control**

22. Quality controls are used with all methods and must accompany each set of assay results produced in the lab.

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

23. Visual AC charts/data are routinely kept for all methods and are displayed in the lab.

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

24. QC data are analyzed and then used to decide when to accept or reject assay results. (Note: see-k evidence that shows that QC data is actually being used in decision making by the laboratory manager, e.g. ask for copies of some assays where QC values were deemed “out” and sample results from that assay were rejected. Observe that the samples were repeated in a later assay that gave QC values in-control.)

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

25. There is ongoing participation in external QC programs or routine sample cross-checking with other laboratories. (Note: Ask for copies of external QC reports that are proved and identify the laboratory in question):

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

### **Staff training, expertise and development**

26. Staff have adequate levels of training and expertise to undertake the tasks expected of them.

\_\_\_\_\_yes      \_\_\_\_\_no  
(describe how often training occurs, what is covered, who attends, the level of supervision, etc.)

27. Some form of periodic technical performance evaluation is conducted to assess the skills, technique, and compliance of each laboratory technician in order to demonstrate that they can meet expected protocol standards.

\_\_\_\_\_yes      \_\_\_\_\_no

(describe how often, who conducts, etc.):

27. The laboratory has developed some type of internal training and skills development or enhancement exercises for staff members. (Note: This is particularly important when performance evaluation and/or QC indicates that gap exists between the technicians current ability and level of operation, and what is expected.

\_\_\_\_\_yes      \_\_\_\_\_no

(comments)

28. Overall comments:

### **Persons met and documents reviewed**

List names, titles/occupations, and location (city or village) of all persons interviewed.

List all documents reviewed.

### **E. INFORMATION, EDUCATION AND COMMUNICATIONS (including educational curricular)**

This section is designed to review whether consumer behavior change objectives are being met and to suggest areas for improvement if indicated. There are many elements in a plan to change consumption patterns from consumption of salt to consumption at the household level as well as issues affecting the availability of iodized salt through work with producers, wholesalers, and retailers. Producers, processors, wholesalers and retailers may be thought of “customers” for salt iodization program. These “customers” ultimately serve final Product “consumers” that can be broadly partitioned as institutions (farms, industry, restaurants, hospitals, and schools), and households.

Given the complexity of developing a plan to influence the behavior of these customers and consumers, it is important to understand the context in which this evaluation is performed. The evaluators must review the program marketing objectives and determine whether these are being met. This information should guide the evaluation process. Thus, if consumers are demanding iodize & salt, but that salt is not available, then the marketing strategy directed at the “customers” (producers through retailers) needs evaluation. Similarly, examination of actual media materials is only necessary if the consumer behavior data indicate that messages aren’t being received or reacted to in a manner consistent with program objectives. Finally, if the program objectives are not met, the marketing framework suggests that a consumer need is not being met by the program, and that some element or combination of elements in the marketing mix: product, price, distribution (place) or promotion scheme, needs adjustment. Because of the detail required, the promotion component of the marketing mix is often prepared separately as a communication plan.

This section only serves as a guide for the evaluation process. Evaluators must determine what components are most relevant based on the data available to them.

This section also includes review of inclusion of iodine deficiency in educational curricula.

### **Methods**

- Document review
- Field assessment of producer, wholesaler, retailer and consumer behavior
- Key informant interviews, including educators.

### **Documents to review**

- National and provincial program plans
- Marketing plans for various geographic regions
- Communication plans for various geographic regions
- Documents detailing consumer behavior data
- National Education Plan
- National primary and secondary school curricula
- National medical and graduate school curricula
- Village health worker training guides
- MOH training manuals
- Community education materials

### **Key informant interviews/focus group discussions**

- Producers, wholesalers and retailers
- Consumers at the institutional or household level
- Officials responsible for developing marketing plans
- Individuals involved with message development and distribution as relevant
- MOE representative
- Teachers (field visits)
- School Children (field visits)
- Educational curriculum committees

### **Central Level topics to cover for IEC**

Review the overall marketing plan and determine the objectives for the plan for each target audience. Thus determine the plan for influencing both providers and consumers, as noted above.

Review available data on the response of the target audiences to the marketing activities. This will include assessment of the degree to which objectives are being met both for production and distribution, and for consumption. Some of this assessment may have to come from data collected during field visits.

Review background information on consumers, and the ways in which the marketing plan may or may not address consumer issues.

Review documents on sales objectives, costs, competition, and profit margins for providers. Assess the degree to which the marketing plan addresses these issues.

Summarize the issues of concern for the product (package size, labeling, quality): price (degree of subsidization and sustainability of that subsidy, availability to lower income groups): place (obstacles in production and distribution): and promotion (activities directed at availability and toward consumption, approaches to different segments).

### **Central level topics to cover for curriculum review**

Review primary, secondary, undergraduate, graduate, professional, and technical school curricula to see if the importance of iodine in the diet is covered. If Iodine deficiency's effect on intellectual and socio-economic development is given prominence and if prevention strategies are presented clearly.

Review government training programs to see if they cover the significance of iodine in the diet, the effects of IDD (as above) and are clear on the responsibilities of health care workers in monitoring program activities.

Assess MOE level of commitment and advocacy efforts to see if high level officials are aware of the importance of iodine deficiency and are committed to using the educational system to alleviate the problem.

### **Field assessments for IEC**

Determine key groups to interview, from the central level assessment. This might include discussions with groups of producers, wholesalers, retailers, or consumers. Discussions should be designed to confirm impressions and suggest areas for improvement.

Collect data on iodized salt availability and consumption. Discuss the constraints to progress toward marketing objectives.

### **Field assessments for curriculum review**

Interview district education officer (DEO); teachers, and primary school children; district health officer (DHO) and district staff (including villager workers if possible); and a group of agricultural extension workers.

Assess the level of awareness of the importance of iodine and of consuming iodized salt displayed by the DEPO, teachers, and students. Review the curriculum and teaching methods (e.g. use of salt test kit in schools) and interview school children to assess their level of awareness of the problem and how to prevent it through the diet.

Evaluate the level of awareness on the part of the staff of the DHO and other district level government workers, such as those in agriculture, and their use of information during home visits and clinic training sessions.

## **The Process: Information, Education and Communication Checklist**

### **Summary data**

IEC strategy exists? Y N	Social Marketing ? Y N
Industry Marketing plan? Y N	Funds Allocated? Y N
Communication efforts pursue behavior change rather than awareness? Y N	
Consumer preference are well defined? Y N	
Communication and education materials have been evaluated? Y N	
Consumers are aware of IDD and the importance of iodized salt? Y N	
School curricula address IDD and the importance of iodized salt? Y N	

### **Information checklist for central assessments**

#### **Marketing plan**

1. Data are available that describe the iodization program in terms of sales and growth history, and current situation, including documentation of industry market plans.

\_\_\_\_\_yes      \_\_\_\_\_no

(comments):

2. Comprehensive analysis of consumer preferences has been done, include review of cultural practices, product preferences and reasons for these preferences, fears and concerns, and price considerations, and there is collaboration with industry on use of these data.

\_\_\_\_\_yes      \_\_\_\_\_no

(describe how this information was collected and analyzed):

#### **Communications**

3. A communications strategy exists with clear objectives for influencing producers, importers, wholesalers and retailers to make iodized salt widely available.

\_\_\_\_\_yes      \_\_\_\_\_no

(comments):

4. A communications strategy exists with clear objectives for influencing consumer behavior at the household or institutional level.

\_\_\_\_\_yes      \_\_\_\_\_no

(comments):

5. Communication channels have been identified, such as media, community-level, face-to-face, and materials have been developed.

\_\_\_\_\_yes      \_\_\_\_\_no

(comments):

6. Materials and formats (videos, pamphlets, scripts) have been developed, and are suitable and consistent: ready for modification as needed.

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

7. An evaluation plan has been developed to assess the effectiveness of the marketing and communications plans for each target audience.

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

8. Evidence suggests that producers, wholesalers and retailers have modified their behavior on the basis of the marketing and communications activities.

\_\_\_\_\_yes      \_\_\_\_\_no  
(describe proportion of those interviewed that have: been influenced and what influenced them; compare availability of iodized salt with previous periods):

9. Evidence suggests that consumers have modified their behavior on the basis of the marketing and communication activities.

\_\_\_\_\_yes      \_\_\_\_\_no  
(show proportion who report receiving communications about iodized salt and what influenced them):

10. Data exist on the financial aspects for the communication and marketing plan, such as overall costs, cost-effectiveness, long-term cost projections and sustainability for these activities.

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

11. communication strategies focus increasingly on behavior change rather than simple awareness building.

\_\_\_\_\_yes      \_\_\_\_\_no  
(note any steps taken to measure this change):\

**Primary and secondary school curricula**

12. The school curriculum includes a section on the importance of iodine in the diet.

Primary school:      \_\_\_\_\_yes      \_\_\_\_\_no  
Secondary school      \_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

13. The curricula include the impact of iodine deficiency on intellectual development and potential (rather than just goiter or cretinism and do not discuss IDD as a problem confined to “endemic” areas.):

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

**Undergraduate and graduate school curricula**

14. Undergraduate and graduate school curricula include sections on iodine and IDD.

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

15. These sections highlight more than just the clinical aspects, i.e. the importance of iodine for intellectual development.

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

**Professional school curricula (decision-makers)**

16. The curricula in the professional schools (medical, nursing, social work, doctoral programs) cover iodine and IDD as a significant part of the training program.

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

17. The curriculum in professional schools highlights more than just the clinical aspects, i.e. the importance of iodine in intellectual development, and covers intervention strategies.

Intellectual development:      \_\_\_\_\_yes      \_\_\_\_\_no  
Intervention strategies:      \_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

**Short course and training curricula (implementors)**

18. Iodine and IDD are included in the training material used by technical schools (including extension services, agricultural schools, engineering courses related to the salt industry)

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

19. Manuals used in government training programs (for government health staff, village health workers, training, paraprofessional training) include sections on the importance of iodine in the diet and the role of iodized salt.

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

20. These sections are clear on the impact of and solutions for preventing IDD, and on the responsibilities of each health worker.

Impact and solutions:    ☐ yes            ☐ no  
Responsibilities:        ☐ yes            ☐ no  
(comments):

**MOE commitment level and advocacy efforts**

21. The MOE has mandated that iodine and IDD be covered in the school curriculum and has followed up to be sure that it is.

☐ yes            ☐ no  
(comments):

22. The MOE provides resources to schools/teachers for iodine education efforts.

☐ yes            ☐ no  
(comments):

**Information checklist for field assessments**

23. Retailers express no concerns about consistent availability of iodized salt from wholesalers or producers or demand for iodized salt by consumers.

☐ yes            ☐ no  
(describe any concerns expressed):

24. Focus group discussions with mothers or heads-of-households suggest that there are no significant barriers to consumption of iodized salt.

☐ yes            ☐ no  
(describe any barriers and proportion interviewed that face them):

**Communications**

25. Retailers appear to understand the importance of iodized salt and do not express significant barriers to stocking iodized salt preferentially.

☐ yes            ☐ no  
(show proportion of those interviewed with this understanding and who do not face barriers):

26. There is an apparent congruence between consumer preferences with regard to package size and price issues and retailer products available.

☐ yes            ☐ no  
(show proportion of consumers interviewed that are happy with package size and price):

27. Communication messages are reaching consumers and there are no apparent aspects to the communication program that are misleading or ineffective.

\_\_\_\_\_yes      \_\_\_\_\_no

(show proportion of consumers interviewed who have received and understood messages and found them effective):

**Primary and Secondary School**

28. The DEO is aware of the impact of iodine deficiency and the role of salt iodization in preventing it.

\_\_\_\_\_yes      \_\_\_\_\_no

(comments)

29. A significant proportion of teachers are aware of and understand the intellectual consequences of iodine deficiency, and included the topic in their teaching during the past or present school year.

Aware of issues:      \_\_\_\_\_yes      \_\_\_\_\_no

Included in teaching:      \_\_\_\_\_yes      \_\_\_\_\_no

(include proportion of those interviewed that are aware):

30. Most students who were aware of and understood the importance iodine in the diet and role of iodized salt in preventing IDD.

\_\_\_\_\_yes      \_\_\_\_\_no

(show proportion of those interviewed that were aware and understood):

31. Students who were aware generally shared this information with family members.

\_\_\_\_\_yes      \_\_\_\_\_no

(show proportion who reported sharing information):

32. Students had used or observed the salt test kit in school.

\_\_\_\_\_yes      \_\_\_\_\_no

(show proportion who observed use of the test kit):

**District health office**

33. The DHO and the district staff are aware of the intellectual consequences of iodine deficiency, its role in scholastic performance, and the effectiveness of iodized salt as the primary intervention.

DHO:      \_\_\_\_\_yes      \_\_\_\_\_no

Staff:      \_\_\_\_\_yes      \_\_\_\_\_no

(comments):

34. The majority of health staff included discussion of iodine and IDD during home visits or in clinic training in the past year.

\_\_\_\_\_yes      \_\_\_\_\_no  
(show proportion who did):

**Agricultural and other district workers**

35. Describe the workers interviewed and their level of awareness of the importance of iodine, the impact of IDD (e.g. on animal husbandry) and the importance of consuming iodized salt.

36. These workers discuss the importance of iodine and consumption of iodized salt for both human and animal populations with the people they server.

\_\_\_\_\_yes      \_\_\_\_\_no  
(show proportion who do):

37. Overall comments:

**Persons met and documents reviewed**

List names, titles/occupations, and location (city or village) of all person interviewed

List all documents reviewed

**F. MANAGEMENT AND PROGRAM ADMINISTRATRON**

**Methods**

- Document review
- Key informant interviews
- Budget analysis

**Documents to review**

- National Nutrition Plan of Action
- Organizational structure of Ministry of Health, Ministry of Industry, Ministry of Education, and related ministries
- Nutrition division, work plan, budget and staffing documents

**Key informant interviews/focus group discussions**

- National staff, including those in Ministry of Planning and Finance
- Selected provincial and district staff

**Central level topics to cover**

Review components of the national program, including human resource development and training schedule, staff incentive programs and supervision, staffing patterns, staff responsibilities at different levels, and information flows.

Review program budget pertaining to support to program infrastructure, purchase of iodate (if relevant) capitalization expenses (for subsidized iodization units) and other program expenses.

Assess strategic planning including mechanisms for sustainability, monitoring, and evaluation.

### **Field assessments**

Review provincial and district management strategies, including degree of autonomy at each level (control over budget, defined job descriptions).

Assess the use of ancillary staff, such as village health workers, and their responsibilities in program implementation and monitoring.

### **The Process: Management and program administration checklist**

#### **Summary data**

Management plan exists? Y N	Plan development involved other sectors? Y N
Objectives and responsibilities defined? Y N	Budget allocated? Y N
Capacity building plan exists? Y N	Being carried out? Y N

### **Information checklist for central level assessments**

1. There is a comprehensive national program plan for addressing iodine deficiency.

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments)

2. The plan was developed with input and has clear “buy-in” from all involved sectors.

\_\_\_\_\_yes      \_\_\_\_\_no  
(describe who was involved in developing the plan):

3. the plan communicated clear goals, objectives, strategies, activities, and time frames for each program component.

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

4. lines of authority are clearly established for everyone involved and it is clear who has final responsibility and decision making authority for each program component.

\_\_\_\_\_yes      \_\_\_\_\_no  
(comments):

5. Clear lines of communication have been established and are followed.

\_\_\_\_\_y \_\_\_\_\_no  
(comments):

6. There are adequate numbers of staff to carry out all components of the program.

\_\_\_\_\_yes \_\_\_\_\_no  
(compare number needed with number available):

7. The plan provides for training and capacity building on a regular basis.

\_\_\_\_\_yes \_\_\_\_\_no  
(comments):

8. Training is carried out as planned.

\_\_\_\_\_yes \_\_\_\_\_no  
(comments):

9. The plan provides for supervision/

\_\_\_\_\_yes \_\_\_\_\_no  
(describe supervisory scheme):

10. Supervision is carried out effectively.

\_\_\_\_\_yes \_\_\_\_\_no  
(show proportion of program staff interviewed who believe supervision is effective):

11. Responsibilities at each level and for each component are clearly delineated.

\_\_\_\_\_yes \_\_\_\_\_no  
(describe any lack of clarity)

12. There is budget established for program activities that accounts for all aspects of the program infrastructure (e.g. purchase of iodate, capitalization expenses, and other program expenses).

\_\_\_\_\_yes \_\_\_\_\_no  
(describe any areas not covered):

13. Budgetary needs are met.

\_\_\_\_\_yes      \_\_\_\_\_no

(describe the degree of shortfall, if any):

14. The program contains adequate incentives for production, marketing, and distribution of iodized salt.

\_\_\_\_\_yes      \_\_\_\_\_no

(describe the incentives):

15. The program as planned and executed is sustainable.

\_\_\_\_\_yes      \_\_\_\_\_no

(describe any aspects that are not sustainable):

### **Information checklist for field level assessments**

16. A district or provincial plan exists for implementing the national plan.

\_\_\_\_\_yes      \_\_\_\_\_no

(comments):

17. Lines of authority between the provincial and district offices are clear, including budget disbursement.

\_\_\_\_\_yes      \_\_\_\_\_no

(comments):

18. Logistical issues are addressed clearly. (Include review of supplies for salt testing, monitoring and data collection, and reporting).

\_\_\_\_\_yes      \_\_\_\_\_no(describe any issues not so addressed):

19. District offices perform regular supervision and periodic training.

\_\_\_\_\_yes      \_\_\_\_\_no

(comments):

20. the majority of position related to the program are filled and staff turnover is limited (e.g. staff remain more than two years).

\_\_\_\_\_yes      \_\_\_\_\_no

(show proportion that do not stay at least two years)

21. Overall comments:

**Persons met and documents reviewed**

List names, titles occupations, and location (by city or village) of all persons interviewed  
List all documents reviewed

<b>SECTION III: THE PROGRESS MEASURING PROGRESS IN COVERAGE AND IMPACT</b>
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**Goals** To review progress in elimination of iodine deficiency by analyzing existing data on a variety of population-based clinical, biologic and programmatic indicators.

If requested to perform an independent survey of clinical and biologic indicators in school children, and of household and retail shop iodized salt coverage.

To provide a summary of these data with respect to WHO criteria.

**Introductory Note:**

Ultimately, national program efforts must result in elimination of iodine deficiency, as measured by specific indicators. For given populations, clinical and biologic indicators (often called impact indicators) such as goiter grade by palpation and urinary iodine assess prevalence of iodine deficiency. Coverage indicators (often called process indicators) such as household use of iodized salt assess the reach of the program and in the case of iodized salt, correlate well with impact indicators. Ideally, a combination of indicators will be used for periodic measurement of the progress of elimination efforts.

This section provides guidelines for review and tools for measuring progress. The section is based upon the information and guidelines contained in the document “Indicators for assessing Iodine Deficiency Disorders and their control through salt iodization”, WHO/NUT/946, WHO UNICEF, ICCIDD. Where current prevalence data has not been collected and analyzed, it may be necessary for additional team members, specifically dedicated for this purpose, to conduct surveys and analyze the results.

**Methods**

- Document review
- Field assessments of district health office data
- Survey of populations if necessary
- Key informant interviews

**Documents to review**

- Government, university, agency, and NGO reports on IDD prevalence and household iodized salt coverage, including various surveys that include IDD indicators (such as household salt use including in demographic or multiple indicator surveys)
- Laboratory reports on quality assurance and routine data analysis.

### **Key informant interviews/focus group discussions**

- Discussions with government division responsible for collection and reporting of prevalence data
- Discussion with university researchers and others involved in IDD research
- Discussion with directors of various NGOs involved in iodine deficiency elimination at the community level

### **Central level topic to cover**

Review data on the primary indicators of interest, including: goiter grading by palpation, thyroid volume determination by ultrasound, urinary iodine determination, and household iodized salt use. Of these palpation and urinary iodine in schoolchildren may be the most practical to review.

Review all reports from national, provincial, or district surveys that include indicators for iodine deficiency. Assess methodology to determine consistency, quality of data collection and analysis and trends over time. This may include surveys specifically for micronutrient deficiency or surveys that have included selected variables. EPI surveys, demographic health surveys and health indicator surveys may include information on household use of iodized salt and goiter prevalence.

Review laboratory reports including analysis from routine collection along with any information concerning neonatal screening for hypothyroidism. This should include laboratory methods and quality assurance procedures (See also laboratory section)

Review university and NGO reports on small scale surveys concentrating on the indicators assessed and the methods used.

### **Field assessments**

Review provincial and district level reports on biologic indicators. These may be limited to household iodized salt coverage, but may also include goiter grading, school-based sampling, or urinary iodine analysis. Review records from NGOs working on micronutrient programs.

### **Independent survey**

In some instances the government may wish to have an independent quantitative assessment, through a representative survey to confirm reduction in prevalence. Hence it may be necessary to carry out such an assessment of impact and process indicators for tracking biological progress respect to IDD status of the population. Where possible, other ongoing surveys should be used to avoid the unnecessary expense of an additional survey. If a special survey is required, it should be simple, rapid, and representative at the geographic level requested by the government---in most instances, nationally representative. On the basis of logistic simplicity, the following

indicators are recommended: with data collected from school children, age 6-12 year, in a representative selection of schools, and from retail shops in the same villages as the schools.

**Impact indicators:** total goiter rate by palpation (clinical)  
Urinary iodine excretion (biochemical)

**Coverage indicators:** Iodine content of salt (ppm by titration) through analysis of salt samples brought by school children from their respective households by titrimetric method.  
Iodine content of salt (ppm by titration) by analyzing salt samples collected from a representative sample of retail shops in the same villages as the schools.

### **The Progress: Checklist for measuring progress in coverage and impact**

#### **Summary data**

Goiter prevalence_____	Date of last survey_____	Level of representation_____
Median urinary iodine_____	Date of last survey_____	Level of representation_____
Iodized salt coverage at retail_____	Date of last survey_____	Level of representation_____
Iodized salt coverage at households_____	Date of last survey_____	Level of representation_____

#### **Information checklist for central level assessment**

1. A national baseline survey and a follow-up survey have been conducted.

\_\_\_\_\_yes \_\_\_\_\_no  
(show when each was conducted):

2. The methodology used for the surveys is adequate to give a representative estimate of the severity of iodine deficiency. (Note: Sampling methods, sample size, selection of households, data collected, laboratory methods and analysis should be reviewed to determine adequacy)

\_\_\_\_\_yes \_\_\_\_\_no  
(describe any problems with the methodology)

3. Provincial or district level surveys have been completed.

\_\_\_\_\_yes \_\_\_\_\_no  
(comments as above)

4. Survey reports include indicators other than only goiter grading by palpation.

\_\_\_\_\_yes \_\_\_\_\_no  
(describe indicators used):

5. Iodine deficiency indicators have been included in other types of surveys, such as EPI surveys or Health and Demographic surveys.

\_\_\_\_\_yes      \_\_\_\_\_no

(describe which surveys and dates of survey):

6. Coverage data exist for household iodized salt use.

\_\_\_\_\_yes      \_\_\_\_\_no

(Comments):

7. The methodology used for determining household coverage is adequate to give a representative estimate of the availability of iodized salt either nationally or in selected area. (Note: Sampling methods, sample size, selection of households, laboratory methods and analysis should be reviewed to determine adequacy)

\_\_\_\_\_yes      \_\_\_\_\_no

(Comments):

#### **Information checklist for field level assessment**

8. District or sub-district offices have a regular program to review biologic indicators. (Note: Describe the methods for collection and transport of laboratory specimens)

\_\_\_\_\_yes      \_\_\_\_\_no

(Comments):

9. District or sub-district offices have a regular program to review household salt iodine content.

\_\_\_\_\_yes      \_\_\_\_\_no

(Comments):

10. Overall Comments:

#### **Persons met and documents reviewed**

List names, titles/occupations, and location (by city or village) of all persons interviewed

List documents reviewed

#### **Tools for conducting an independent survey**

**Objectives:** To study the current status of IDD as measured by goiter prevalence and urinary iodine excretion (UIE) in primary school children aged 6-12 years.

To determine the proportion of households using adequately iodized salt (iodine content of salt in ppm by titrimetric methods as defined legally in the country) by analyzing salt samples brought by school children from their respective households.

To determine the proportion of retail shops selling adequately iodized salt (iodine content of salt in ppm by titration, as defined legally in the country) by analyzing the salt samples collected from retail shops.

### **Overall study design**

Ideally a rapid population-based cluster survey should be done using population proportionate sampling (PPS) for school selection. All the administrative areas (usually districts) with their respective populations for the country are listed. Using the standard “30 cluster PPS” methodology, a total of 30 clusters are selected. A primary school is randomly selected from each cluster. The final selection of the areas should take into consideration the time available to complete the survey (generally two weeks).

### **Selection of school children**

Once school selections are completed, a list of selected schools and their location is prepared. For each school, a list of all children age 6-12 years is compiled. Using a random start, select a total of 40 children (both boys and girls) present on the day of the survey. Students are examined for goiter grading and urine samples collected. It may be that the total number of children age 6-12 in a given class approximates the sample size required, in which case, all children from the class can be included. Sample data recording forms are provided at the end of this section.

### **Selection of household and retail ship salt samples**

On the day of survey, all the children age 6-12 years are asked to bring salt samples from their house. The salt samples brought by the children who were examined for goiter grading are then tested for iodine content using field test kits. From these, a total of 10 samples are randomly selected for analysis by titration.

Salt samples are collected from all the retail shops encountered during field visits. These are tested by field test kits and also saved for analysis by titration at the Provincial or Central laboratory.

**Detailed information and guidelines for cluster survey methods are given in “Chapter 8: Cluster Surveys”, of the joint UNICEP-PAMM-MI-ICCIDD-WHO publication “Monitoring Universal Salt Iodization Programmes”, 1995.**

### **Clinical assessment**

All the children are examined by palpation for thyroid enlargement by team members/physicians trained in this clinical assessment. Goiter is graded according to the criteria recommended by the Joint WHO-UNICEFF-ICCIDD Technical Consultation Group. The WHO classification of goiter is provided. Below.

**Simplified classification of goiter**

Grade 0:	No palpable or visible goiter
Grade 1:	A mass in the neck that is consistent with an enlarged thyroid is palpable but not visible when the neck is in the normal position. It moves upward in the neck as the subject swallows. Nodular alteration(s) can occur even when the thyroid is not enlarged.
Grade 2:	A swelling in the neck that is visible when the neck is in a normal position and is consistent with an enlarged thyroid with the neck is palpated.

Source: Joint WHO/UNICEF/ICCIDD Consultation on “Indicators for Assessing Iodine Deficiency Disorders and their Control through salt iodization” Geneva, November 1992. Document WHO/NUT/96.6

**Laboratory analysis**

From the 40 children examined for thyroid size, a minimum of 10 children are randomly selected for urine collection. Spot urine samples are collected in plastic screw-capped bottles for analysis of urinary iodine. Analysis is done by the standard acid digestion methods described by Dunn et.al.

Salt samples collected from children and from retail shops are analyzed using standard titration methods and reported as parts per million (ppm).

**Results and Discussion**

Results can be presented in three tables:

- Prevalence of goiter by age in school children
- Median urinary iodine values and distribution in school children
- Iodine content of salt samples from households and retail shops

“Dummy” tables are provided in Annex A.

Annex A: Questionnaires and Dummy Tables
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Sample Questionnaire for Knowledge, Attitude, Practice and Behavior (KAPB) survey of retail shops owners/managers.

1. Where do you buy Salt (Check below, and specify approximate distance in km. From the place of procurement)
  - a) Another shop in the same town/village \_\_\_\_\_(approximate km)
  - b) Another shop in nearby town\_\_\_\_\_
  - c) From the whole sale shop in district\_\_\_\_\_
  - d) From weekly market \_\_\_\_\_
  - e) Others: Specify \_\_\_\_\_
  
2. How often to you by salt?
  - a) Less than once a month
  - b) Once a month
  - c) Once in 2-3 months
  - d) Once in 6 months or less often
  
3. Salt availability in shop (observation by interviewer)
 

	<u>Availability</u>	<u>Labeled</u>
a) HDPE bags	Yes/No	Yes/No
b) Jute bags	Yes/No	Yes/No
c) Small plastic packets (1/2 Kg, 1K, larger quantity)	Yes/No	Yes/No
  
4. What types of salt do you sell? What is the price per Kg?
 

a) Crystalline salt	price per kg_____
b) Powdered salt	price per kg_____
c) Others: Specify_____	price per kg_____
  
5. Where do you store salt?
 

	<u>As Told</u>	<u>As Observed</u>
a) Go down	_____	_____
b) Inside the shop	_____	_____
c) Outside the shop	_____	_____
d) Others	_____	_____
  
6. How do you store salt?
 

	<u>As Told</u>	<u>As Observed</u>
a) Open as a mound	_____	_____
b) Covered in bags	_____	_____
c) Packets/wooden box	_____	_____

7. What are the ill effects of iodine deficiency?  
(please tick response, do not suggest answers)
- a) Goiter
  - b) Cretinism
  - c) Mental retardation
  - d) Don't know
  - e) Others Specify\_\_\_\_\_
8. Have your heard about iodized salt?
- a) Yes
  - b) No
- If yes from whom? (If required, tick multiple answers, do not suggest answers)
- a) Health worker
  - b) Radio
  - c) Neighbors
  - d) Own child
  - e) Another shop keeper
  - f) Others Specify\_\_\_\_\_
9. What are the benefits of consuming iodized salt? (Do not suggest answer and write the response verbatim.
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
10. Are you aware of any regulation regarding the sale of salt? (Write the answer verbatim)
- a) Yes
  - b) No
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
11. Has salt been sampled from your shop in the last 6 months?
- a) Yes
  - b) No

Dummy Tables for compiling results of Knowledge, Attitude, Practice and Behavior (KAPB) survey of retail shop owners/managers.

Table 1: Salt procurement for retail sale

Source	Frequency (n = )
From another shop in the same town/village	%
From another ship in nearby town wholesaler at district headquarters	%
From a shop outside the country	%
Directly from the factory	%

Table 2: Approximate distance traveled for salt procurement

Distance (km)	Frequency (n = )
< 20	%
20-50	%
51-150	%
> 151	%

Table 3: Frequency of salt procurement from source

Frequency of salt procurement	Frequency (n = )
Once a month	%
Once in 2-3 months	%
Once in 6 months or less often	%

Table 4: type of packaging for salt at retail shops

Type of packaging	Frequency (n = )
Only HDPE Bags	%
Only Jute Bags	%
Only Plastic Packets (small)	%
HDPE Bags & Plastic Packets (small)	%
Others (plastic bag, big plastic container	%

Table 5: Price of salt

Price/Kg	Frequency (n = )
Low	%
Average	%
High	%

Table 6: Place of storage of salt in retail shop “as told”

Location	Godown	Shop	Both Godown and Shop	Total
Inside	%	%	%	%
Outside	%	%	%	%

Table 7: Perception of retail shop owner/manager of ill effects of IDD

Ill effects	Frequency (n = )
Don't know	%
Goiter	%
Brain defects	%
Partially correct answer (goiter+non IDD condition)	%
Incorrect knowledge	%

Table 8: “Heard about iodized salt”

Response	Frequency (n = )
Yes	%
No	%

Table 9: Benefits of iodized salt

Response	Frequency (n = )
Don't know	%
Prevents goiter	%
Brain defects	%
Prevents goiter & improves general health	%
Improves general health	%

Table 10: Awareness regarding salt regulations

Response	Frequency (n = )
Yes	%
No	%

Table 11: Salt samples from shop analysis

Response	Frequency (n = )
Yes	%
No	%

Table 12: Source of information on iodized salt

Source	Frequency (n = )
<b>A. Person to person contact</b>	
1. Formal a) Health Worker b) Teacher	%
2. Non Formal a) Neighbors b) Shopkeepers c) FCB/BSE agent d) Family member e) Customer	%
<b>B. Mass media</b>	
1. Formal a) Radio b) Newspaper c) TV (India) d) Pamphlets e) School Books	%
2. Non Formal a) Product information on salt packets b) Calendar	%
<b>C. Group contact</b>	
a) During professional training b) Workshop c) Seminar d) Conference	%
<b>D. Multiple Sources</b>	%

Sample Questionnaire for Knowledge, Attitude, Practice and Behavior (KAPB) survey of consumer.

1. Where do you buy salt?
  - a) Local shop in same town/village
  - b) Another shop in nearby town
  - c) From the whole-sale shop at district
  - d) From weekly market
  - e) In a shop across the border (another country)
  - f) Other: Specify \_\_\_\_\_
2. What type of salt do you buy? What is the price per Kg?
  - a) Crystalline salt price per kg \_\_\_\_\_
  - b) Powdered salt price per kg \_\_\_\_\_
  - c) Others: Specify \_\_\_\_\_ price per kg \_\_\_\_\_
3. What sort of salt (what packing do you buy? (If appropriate, tick multiple answers)
  - a) Loose
  - b) Packets
  - c) Full bag
4. How often do you buy salt?
  - a) Less than once a month
  - b) Once a month
  - c) Once in 2-3 months
  - d) Once in 6 months or less often
5. How much salt do you buy at a time.
  - a) Less than 1 kg
  - b) 1 kg
  - c) More than 1 and up to 5kg
  - d) More than 5 and up to 10 kg
  - e) More than 10 kg
6. Where do you keep salt?
  - a) In the kitchen
  - b) In the store room
  - c) Outside the house
  - d) Other: Specify \_\_\_\_\_
7. How do you store salt?
  - a) Container with a lid
  - b) Container without a lid

- c) The same bag/packet in which salt is bought
  - d) Lying on the floor (open)
  - e) Lying on the floor (covered)
8. What are the ill effects of iodine deficiency? (Do not suggest answer, tick multiple answers if appropriate)
- a) Goiter
  - b) Cretinism
  - c) Mental retardation
  - d) Don't know
  - e) Other: Specify \_\_\_\_\_

9. Have you heard about iodized salt?

- a) Yes
- b) No

If yes, from Whom (Do not suggest answers, tick multiple answers if appropriate)

- a) Health worker
- b) Radio
- c) Neighbors
- d) Own child
- e) Shop worker
- f) Others: Specify \_\_\_\_\_

10. What are the benefits of consuming iodized salt? (Do not suggest answers and write response verbatim)

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11. Are you aware of any regulations regarding the sale of salt? (write answer verbatim)

- a) Yes
- b) No

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12. What livestock do you have at home?

Livestock

- a) Cow
- c) Buffalo
- d) Bullock
- e) Goat/sheep

How Many

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- f) Poultry \_\_\_\_\_
- g) Others: specify \_\_\_\_\_
- h) None \_\_\_\_\_

13. Do you feed the same salt to livestock?

- a) Same salt is given
- b) Buys different salt
- c) Salt not given

Dummy Tables for compiling results of Knowledge, Attitude, Practice, and Behavior (KAPB) survey of consumers.

Table 1: Distribution of stakeholders interviewed.

Stakeholders	Frequency (n= )
Education Department	%
Health Professionals	%
People's Representative	%
Agriculture and Animal Husbandry Officials	%
General Public	%
Salt Traders	%
Administrators & Government Officials	%

Table 2: Source of salt purchase

Source	Frequency (n= )
From a shop in the same town/village	%
From another shop in nearby town or wholesalers at district headquarters	%
Phuntsholing FCG	%

Table 3: Price of Salt

Price/Kg	Frequency (n= )
Average	%
High range	%

Table 4: Type of packaging in which salt is purchased

Type of packaging	Frequency (n= )
Loose	%
Packets	%
Full Bag	%
Loose + Full Bag	%
Packets + Full Bag	%

Table 5: Frequency of salt procurement from source

Frequency of salt procurement	Frequency (n= )
One a month	%
One in 2-3 months	%
One in 6 months or less often	%

Table 6: Quantity of salt purchased at a time

Quantity	Frequency (n= )
< 1kg	%
> 1kg – 5 kg	%
> 5 – 10 kg	%
>10 kg	%

Table 7: Place of storage of salt at home.

Place of storage	Frequency (n= )
Kitchen	%
Store room	%
Kitchen & store room	%

Table 8: Method of storage of salt at home.

Place of storage	Frequency (n= )
Container with a lid	%
Container without a lid	%
Same bag/packet in which salt is bought	%
Lying on the floor (open)	%
Lying on the floor (covered)	%

Table 9: Perception of ill effects of IDD

Ill effects	Frequency (n= )
Don't know	%
Goiter	%
Goiter + mental retardation	%
Goiter + cretinism	%
Goiter + mental retardation + cretinism	%
Brain defect	%
Partially correct answer (goiter + non IDD condition)	%
Incorrect knowledge	%

Table 10: Heard about iodized salt.

Response	Frequency (n= )
Yes	%
No	%

Table 11: Source of information of Iodized salt.

Source	Frequency (n = )
<b>A. Person to person contact</b>	
3. Formal a) Health Worker b) Teacher	%
4. Non Formal a) Neighbors b) Shopkeepers c) FCB/BSE agent d) Family member e) Customer	%
<b>B. Mass media</b>	
3. Formal f) Radio g) Newspaper h) TV (India) i) Pamphlets j) School Books	%
4. Non Formal c) Product information on salt packets d) Calendar	%
<b>C. Group contact</b>	
e) During professional training f) Workshop g) Seminar h) Conference	%
<b>D. Multiple Sources</b>	%

Table 12: Benefits of Iodized salt.

Response	Frequency (n = )
Don't know	%
Prevents goiter	%
Prevents goiter & improves general health	%
Improves general health & prevents disease	%
Prevents goiter and mental retardation	%
Prevents goiter and cretinism	%
Prevents IDD	%
Prevents goiter + mental retardation + cretinism	%
Partially correct answer (goiter + non IDD condition)	%
Incorrect knowledge	%

Table 13: Awareness regarding salt regulations.

Response	Frequency ( n = )
Yes	%
No	%

Table 14: Do you have livestock?

Response	Frequency ( n = )
Yes	%
No	%

Table 15: Do you feed the same salt to livestock?

Response	Frequency ( n = )
Yes	%
No	%

Sample form for collection of data on school children

ID #	Name	Age	Sex M/F	Goiter Grade	Clinical Impression on other IDD manifestations	Urine Same No.	Urinary Iodine	Salt Sample no.	Types of salt	Salt Iodine Content

Age: Age in completed years to be noted  
Sex: Male = 1. Female = 2  
Goiter Grade: 0. 1. 2.  
Types of salt: 1 = crystalline. 2 = powered. 3 = other, if other specify  
Salt iodine content (field kit) Nil = 1. Adequate = 2. Inadequate = 3  
Salt iodine content (titration): Parts per million (ppm)

Sample form for collecting information from retail shops

Cluster No. \_\_\_\_\_ Retail Shop No. \_\_\_\_\_

Salt Sample No.	Type of Salt	Iodine Content (Field Kit)	Iodine Content (lab)

Dummy table for : Age and sex distribution in school children, goiter prevalence, urinary iodine, & iodine content of salt at household and retail sales levels.

Table 1: Age & sex distribution of school children

Age	Sex		Total
	Male	Female	
6-7	%	%	%
8-9	%	%	%
10-11	%	%	%
Total	%	%	100%

Table 2: Prevalence of goiter in school children by age

Age	Total Examined	Goiter Grade			
		0	1	2	TGR = 1+2
6-7	100 %	%	%	%	%
8-9	100%	%	%	%	%
10-11	100%	%	%	%	%
Total	100%	%	%	%	%

Table 3: Urinary iodine levels (ug/l) in school children

Urinary Iodine (ug/k)	Frequency ( n= )
Median	(ug/l)
0-20	%
21-50	%
51- 100	%
101 & above	%

Table 4: Iodine content of salt in household samples, collected through school children

Iodine Content of salt (ppm)	Frequency ( n= )
0 (nil iodine)	%
1 – 14.9 (inadequate iodine)	%
> 15 (adequate iodine)	%
Total	100%

Table 5: Iodine content of salt in retail samples

Iodine Content of salt (ppm)	Frequency ( n= )
0 (nil iodine)	%
1 – 14.9 (inadequate iodine)	%
> 15 (adequate iodine)	%
Total	100%