Assessing Country Progress in Universal Salt Iodization Programs

Iodized Salt Program Assessment Tool (ISPAT)
ASSESSING COUNTRY PROGRESS in
UNIVERSAL SALT IODIZATION PROGRAMS

Iodized Salt Program Assessment Tool (ISPAT)

by

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

The Micronutrient Initiative (MI)

Opportunities for Micronutrient Interventions (OMNI)

The Program Against Micronutrient Malnutrition (PAMM)

The United Nations Children’s Fund (UNICEF)

The United States Agency for International Development (USAID)

and

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Acknowledgments

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In 1990, seventy heads of state gathered at the World Summit for Children in New York and pledged to make the elimination of IDD one of the health and social development goals to achieve by the year 2000. Salt iodization was identified as the main intervention to deliver iodine on a continuous and self-sustaining basis to populations around the world. Governments working with the salt industry and supported by international agencies and expert groups then set to plan and implement programs that would enable this measure. Progress in the reduction of IDD through expanded and effective salt iodization has been one of the most impressive public health successes of the decade. The following achievements in IDD elimination are noteworthy:

Over the past decade, salt iodization has witnessed a remarkable growth in application. UNICEF reports that a significant proportion of the populations in more than 87 countries — at least 68% of the world’s population — already has access to iodized salt.

By 1998, more than 170 countries have committed themselves to universal iodization of salt. Many have provided resources for IDD elimination in their national financial budgets and are progressing towards the goal of universal salt iodization.

More than 12 million cases of mental retardation in infants are being prevented annually (United Nations, 1996).

Public and private investment in the iodized salt industry now exceeds one billion dollars (1991-95).

Once established in a country, salt iodization is a permanent and long-term solution to the problem. The potential to eliminate the ancient scourge of IDD now exists.

In many developing countries, salt iodization is the first large-scale experience in national fortification of a commodity. It has taught valuable lessons in collaboration between government, industry, non-governmental organizations, the media and other sectors. It has also offered insights into building and sustaining an intervention politically, technically, financially and culturally.

Success with salt iodization is generating the confidence to address other more complex micronutrient problems.

The goal of universal iodization of all salt for human and animal consumption is close to being achieved. The challenge, however, does not end there. Sustaining this achievement calls for continued, strong political commitment and industry motivation. Problems with producer compliance, quality assurance, logistics and bottlenecks need to be addressed through effective advocacy, social communications, monitoring of salt iodine levels, regulation, and enforcement.
The Iodized Salt Program Assessment Tool (ISPAT) attempts to provide a holistic framework for the assessment and monitoring of salt iodization programs in order to ensure product quality, effective and efficient program management, process and impact monitoring. It draws on field experience in several countries around the world and offers a simple and low-cost mechanism for tracking and sustaining progress toward the goal. When such a framework is instituted in a country, it will go a long way toward ensuring that, once the IDD scourge has been eliminated, it never recurs in the future.

Frances Davidson                  M.G.Venkatesh Mannar
(Title - to come)                  Executive Director
                                     The Micronutrient Initiative
Executive Summary

Impressive and rather rapid progress in the implementation of salt iodization programs around the world has highlighted the importance of two key issues: first, the need for effective monitoring of salt iodization processes to ensure continuous access by populations to adequate iodine through salt; and second, the need to ensure the long-term sustainability of the success achieved in controlling and eliminating IDD. In particular, ensuring sustainability requires continuous assessment of a country’s salt iodization program and the progress it has made toward achieving the IDD elimination goal. Such assessment would need to highlight the essential elements of the program if it is to function effectively and sustainably.

An assessment report can be a way to communicate findings to the responsible authorities and those involved in the management of the program at each level. Accordingly, this manual has been prepared to help governments and national program managers undertake such assessment reports by considering the essential elements necessary for sustainability that are currently in place in their national programs. In particular, its checklists provide users with information on the topics to be included in their assessment reports. The document focuses on three main program elements: the product, the process, and the progress. For each, it describes objectives, suggested methods, types of documents to review, individuals and groups to interview, and details on how assessment should be undertaken. It can therefore be used for a systematic assessment of national salt iodization programs to determine whether effective systems are in place and whether the salt iodization activities result in elimination efforts that are both successful and sustained.

Section I is on product assessment: this is to ensure that all salt for human and animal consumption is iodized according to government standards for iodine content, and that quality assurance mechanisms to confirm iodine content are in place and practised routinely by industry. Section II contains information on how to assess the process. The aim is to maintain a program that generates political will and financial commitment; ensures communication among government policy makers, public and private sectors, and NGOs; educates its population on the importance of consuming iodized salt to eliminate the risk of IDD; and is managed efficiently and effectively. Section III reviews procedures on assessing progress by measuring iodized salt coverage and the iodine deficiency status of the population. Each section provides suggestions for collecting information at both the central level and during field visits.

In addition, the manual’s seven appendices offer detailed checklists on the types of information to collect for an effective assessment (1, 2, and 3); guidance on how to conduct a rapid independent survey (4); sample questionnaires (5); the WHO criteria for assessing IDD (6); and a list of abbreviations and acronyms (7).
Introduction

With the expansion of our knowledge of both the high prevalence and adverse consequences of IDD, the control and elimination of this public health problem has become a priority for most, if not all, national governments. For decades, salt has proved to be an effective carrier for iodine in many industrialized countries where IDD has been controlled. Iodization of salt has, therefore, become an effective standard strategy for elimination of iodine deficiency around the world. Over the past 10 years, considerable progress has been made in implementing universal salt iodization (USI) programmes in countries affected by iodine deficiency. This has been particularly true after the 1990 World Summit for Children meeting in New York.

Global Progress in Universal Salt Iodization

According to UNICEF, 29 of the countries that had IDD problems in 1990 are now (1998) iodizing 90% or more of all salt produced for human consumption. An additional 34 countries are iodizing at least half of all salt for human consumption. In many of the remaining countries, the infrastructure to produce iodized salt has been established and the proportion of iodized salt consumed could reach or exceed 90% by the year 2000. A substantial proportion of the human and financial resources required to achieve universal salt iodization has already been mobilized.

As a result of these efforts, more than 2.5 billion people in developing countries obtain adequate iodine intake through the consumption of iodized salt. UNICEF estimates that 66% of the total edible salt in the world is now iodized. Percentages of households using iodized salt are given in Table 1.

<table>
<thead>
<tr>
<th>Region</th>
<th>Countries with IDD Problem and Salt Iodization Information</th>
<th>Total Population (millions)</th>
<th>Percent of Population Consuming Iodized Salt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Saharan Africa</td>
<td>33</td>
<td>523</td>
<td>61</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>9</td>
<td>215</td>
<td>48</td>
</tr>
<tr>
<td>South Asia</td>
<td>6</td>
<td>1205</td>
<td>65</td>
</tr>
<tr>
<td>East Asia and Pacific</td>
<td>8</td>
<td>1681</td>
<td>72</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>20</td>
<td>461</td>
<td>89</td>
</tr>
<tr>
<td>CEE/CIS and Baltics</td>
<td>11</td>
<td>335</td>
<td>25</td>
</tr>
<tr>
<td>Developing Countries</td>
<td>87</td>
<td>4420</td>
<td>68</td>
</tr>
</tbody>
</table>
Laws and regulations governing salt iodization have been passed, or are in the final stages, in all but eight countries in which IDD is recognized as a public health problem. As we enter the new millennium, the key actions in the effort to eliminate IDD will be to continue to assess the progress made toward eliminating iodine deficiency as a significant public health problem and to sustain what has been achieved already into the future.

Why This Manual?

Much effort and many resources have gone into implementation of salt iodization programs to eliminate iodine deficiency, with varying degrees of success. National governments need to assess the progress made toward their iodine deficiency elimination goals and objectives in a systematic and comprehensive way. While effective salt iodization programs have been successful in reducing IDD substantially on the basis of biological measurements, such assessments should include all essential program elements if they are to determine the adequacy of the required infrastructure and identify areas in need of attention if elimination efforts are to be sustained.

Any program review, therefore, should 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 whether they are being followed so as to make elimination efforts both successful and sustained. Governments participating in the 49th World Health Assembly in May 1996, passed a resolution calling on national governments to monitor their progress and seek independent evaluation to assess their progress toward the goal (WHO, 1996). 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. This manual has been prepared to:

- help governments and program managers assess the progress toward their goals and objectives to eliminate IDD by means of salt iodization;
- identify successful as well as unsuccessful program elements;
- facilitate progress comparisons across regions by means of a standardized tool;
- provide a step-by-step method for evaluating each element of the multisectoral IDD program;
- assist in ongoing advocacy efforts by providing an opportunity to meet with high level political and industry leaders to present findings and encourage renewed commitments toward elimination goals; and
- highlight monitoring efforts, and stress the need for ongoing monitoring to ensure program sustainability.

This manual is divided into three sections which will help users assess the systems in place within national programs by focusing on three elements necessary for sustainability — the product, the process, and the progress — which are also the manual’s three major sections.
* **The Product** — shows how to make sure 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 practised routinely by industry to confirm this.

* **The Process** — describes how to maintain a program that generates political will and financial commitment; ensures communication among government policy makers, public and private sectors, and NGOs; educates its population on the importance of consuming iodized salt to eliminate the IDD risk; and is managed efficiently and effectively.

* **The Progress** — discusses how to measure iodized salt coverage and the iodine deficiency status of the population.

To assess each of these program elements, suggestions are made on methods, types of documents to review, and individuals and groups to interview. Each section provides suggestions on how to collect information at both the *central* level and during *field* visits. Checklists for each section are provided in the appendices for guidance on information to collect. The sample questionnaires in Appendix 5 (requiring adaptation to the national context) may be useful for guiding focus group discussions for KAPB (knowledge, attitude, practice and behavior) surveys.

**Maximizing the Benefits of the Assessment**

The potential benefits of the assessment process can be far-reaching and include the following:

- opportunities to meet with high-level political leaders to applaud their efforts and help create renewed commitment to the program;
- opportunities to meet with industry leaders to let them know of their contribution and listen to their concerns;
- an 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;
- an opportunity for a capacity-building exercise; and
- emphasis on *sustaining* achievements for the coming decades by highlighting areas where the program is weak.

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1 An electronic file is available from PAMM that presents these checklists as actual forms that can be used for recording information collected.
Program Assessment Procedures
The assessment process can be used effectively for advocacy purposes and further raising of awareness. At the beginning of the process, therefore, it is advisable that the team meet with high-level government and supporting agency officials important to the program. The purpose of this meeting is to brief them on the purposes of the assessment, applaud their efforts to date, emphasize the importance of sustaining achievements now, and otherwise secure their support for the assessment and receptiveness to the recommendations likely to come out of the assessment. Similar messages should be exchanged with 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 equally important to debrief with all ministries, agencies, NGOs, key industry officials, and others critical to the program, to report findings and make key recommendations, reinforce the positive aspects of the program and, emphasize the need to continue efforts and systems to ensure sustainability. These meetings and the positive energy created by an enthusiastic team can make a very important contribution to continued program support.

The assessment structure will consist of the following:

* a team composed of program staff and consultants to assess 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;

* an independent rapid survey may be completed to gather complementary information on various program process indicators as well as coverage and prevalence rates; and

* a detailed report of findings with recommendations, prepared and presented to the government and interested agencies and organizations.

Information for the review and assessment is obtained through record reviews and through structured interviews with various stakeholders, including government officials, industry representatives, policy makers, IDD experts, educators, agriculturalists, livestock specialists, students, consumers, and others. The proposed process follows the model used by WHO for evaluating the control of diarrheal disease programs. Information is obtained at the national, district, and local levels. A series of specially designed questionnaires and data collection checklists is provided for this purpose. These activities are followed by an analysis of the program’s status and the 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.

<table>
<thead>
<tr>
<th>Itemization of program components</th>
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<td><strong>The product:</strong></td>
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<td><strong>The process:</strong></td>
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<tr>
<td><strong>The progress:</strong></td>
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The full review should take approximately 2-4 weeks, depending on the country, program size, and complexity. Alternatively, the manual can help guide a more targeted assessment of particular program elements over a shorter period of time.

**Assessment Team Composition**

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

- they have the best knowledge of the program elements and the individuals involved;
- 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 firsthand the best strengthening measures to undertake;
- policymakers likely will give greater consideration to the recommendations emanating from the assessment because of the participation of key program staff;

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2 It will be important not to create an impression of favouring one company over another. Therefore, ideally select an industry representative from the IDD Coordination Committee, an intersectoral body charged with overseeing the program, a trade association, or some other neutral industry representation.
• the assessment process by its very nature is a capacity-building exercise for everyone involved in the process — program staff and outside evaluators alike.

The inclusion of one or two outside consultants is also recommended. If possible, one of them should be from the region and should have program experience. The other consultant could be from an external organization (agency, NGO, academia, or other) that has international experience with IDD.

<table>
<thead>
<tr>
<th>Costs</th>
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<tr>
<td>Costs for such an assessment are not insignificant, and assistance may be available from donor agencies. During field testing of this manual in Malawi, the assessment team was composed of one external consultant from the United States, another from West Africa, and two program staff consultants, with budget required for the following:</td>
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<tr>
<td>• communications</td>
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<td>• international travel and domestic travel to and from field sites (per person)</td>
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<td>• field visits and per diem costs (per person)</td>
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<td>• document reproduction costs</td>
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<td>• supplies</td>
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<tr>
<td>• incidental costs</td>
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<tr>
<td>• international and local consultant salary and per diem</td>
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<tr>
<td>• local consultant salary</td>
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</tbody>
</table>

**Organizing the Assessment**

The assessment team’s work is commonly organized into three sections: a) work in the capital — reviewing national documents and meeting ministry and other officials; b) work in the field — performing interviews and gathering district level information; and c) regrouping, summarizing field work, and preparing the report. A team leader should be selected for local coordination of the assessment. The team leader should review the instrument, help select the team members in a way that ensures intersectoral collaboration and participation, gather background documents to the extent possible, and organize the field work. The team leader should also organize a briefing to be held with key representatives of ministries, industry, agencies, NGOs, and others critical to the IDD/salt iodization program.

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

• understand what information needs to be gathered;
• determine the best way to structure field interviews, including topics to cover, by extracting key points from the checklists;
• fine-tune the schedule and other logistic matters; and
• begin thinking from the outset on the best way to gather and record information so as to facilitate the report writing and recommendations at the end of the process.
It will be necessary to be clear on the objectives of the assessment and the intended use of the information. Will the information be used to gain an *impression* of how the program is working or will there be a need for more quantitative information, as with a special survey? The answers will depend on the intended use of the information and the resources available, and affect the method of selecting field sites and individuals to interview, including consumer or merchant focus groups.

### Documents for review at the central level

<p>| |</p>
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<tbody>
<tr>
<td>National development plan</td>
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<tr>
<td>National action plan for nutrition</td>
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<tr>
<td>Food laws and regulations</td>
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<tr>
<td>Educational curricula</td>
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<tr>
<td>Agency reports</td>
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<tr>
<td>IDD prevalence surveys</td>
</tr>
<tr>
<td>Salt situation analysis information, including iodized salt production and import records</td>
</tr>
<tr>
<td>Program implementation and coverage reports</td>
</tr>
</tbody>
</table>

Once the central information review process is complete, the team will collect information in the field, at the district and local levels, usually dividing up to cover different parts of the country. Team members will interview individuals such as food inspection and enforcement officers, industry representatives, health personnel, teachers, school children, consumers, and others, visiting production sites, markets, and schools.

Throughout the process, it is recommended that the team members meet routinely to discuss the day's findings, identify any information gaps, and begin to synthesize information. A useful way for the team to process information is to complete the checklists for each program component as the information is gathered.
Assessment steps

- Select interdisciplinary team members and team leader
- Gather data and reports
- Assess methodology needs: impression of program vs. more quantitative data
- Arrange field visits and interviews
- Review manual for content and process
- Hold briefing and advocacy meetings with individuals and organizations critical to the program
- Complete central-level review; complete field work
- Meet routinely as a team to begin synthesizing information and complete checklists as information is collected on each component
- Draft and finalize report, including clear and concise summary recommendations
- Debrief with key individuals and organizations
- Disseminate final report to interested organizations and individuals

The next three sections contain detailed information on procedures to assess all aspects of the essential program elements: the product, the process, and the progress.
Section I  The Product: Assessing Progress in Iodized Salt Production

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

To observe salt iodization plants (SIPs) and production procedures, including quality assurance inclusive of equipment, inventory and maintenance, and salt testing, as well as quality assurance practised by importers

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

Methods

• Document review
• Salt iodization plant visits, with 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 the 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 versus demand
  • Standard operating procedures and 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 and focus-group discussions

• Salt producers and importers, and potassium iodate importers or producers
• Industry laboratory personnel or staff responsible for quality assurance
• Industry staff responsible for developing marketing plans
• Wholesalers and retailers

Central-level topics to cover

This section includes suggestions for information to collect at the central level prior to field visits. Much of this information will be available from various documents, while some will be obtained through interviews with selected individuals. The objective is to create a picture of the
production situation. The exact production figures may not be as important as developing a picture of the degree of consolidation of the industry, the degree to which quality assurance measures are being carried out, and the likelihood that segments of the population are not being reached, or are receiving salt without adequate iodine. Consideration should be given to the degree of external support for production (donor support for potassium iodate, donor support for laboratory activities), and progress toward long-term sustainability.

The following information should be reviewed whenever possible.

1) The major sources of salt for the country: the proportion imported and the distribution of production across large, medium and small producers.\(^3\)
   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 also may be useful.

2) 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.

3) Quality assurance procedures, including the ability (and reliability) of the laboratory at each production site; the proportion of salt produced that meets government standards and the variability in salt quality across the major producers and wholesalers, as estimated from industry records.

4) 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.

5) Sales and marketing information, including marketing efforts by industry and the objectives for the marketing plan for each target audience; information on sales objectives, costs, competition, and profit margins for providers. Assess the degree to which the marketing plan addresses these issues.

6) 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 (see also The Regulatory Environment, Section II).

\(^3\) A salt producer is classified as “large” if its annual production is 5,000 tons and up; “medium” if it is between 1,000 and 4,999 tons; and “small” if it is under 1,000 tons.
7) Constraints to producing, importing, and selling iodized salt, including the industry perspective on 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 to production, or importation and distribution); and *promotion* (activities directed at availability and toward consumption, approaches to different segments of the population).

**Field assessments**

The following information is collected during field visits to salt iodization plants, import facilities and also district or provincial health offices. Each team should visit provincial government offices and at least one or two district offices as well as production and import or wholesale sites in their areas. The following information should be reviewed whenever possible4:

1) at salt iodization plants visited: the production capacity and proportion of salt iodized; quality assurance procedures, recording the type of procedure, findings and actions taken, and estimating how long these procedures have been in effect; salt distribution patterns, marketing, market share, and interruptions in production; equipment lifespan and maintenance;

2) at import or wholesale and retail markets: price and distribution patterns;

3) at government offices: any further documentation of distribution, price and price change over time, and any inspection records as well as QA practice.

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Section II  The Process: Assessing Progress in Program Implementation

Objectives  To review IDD elimination program activities related to policy and advocacy; legislation, regulation and enforcement; monitoring and evaluation; information, education and communication (IEC); and overall program management.

To review overall program quality assurance, including government laboratory sufficiency and proficiency.

To review district and community activities, and the knowledge, attitude, practice and behavior (KAPB) regarding 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, has many dimensions. The process involves many sectors, and includes the entire spectrum from political manoeuvering to technical laboratory quality assurance. Although all program elements are interdependent, to facilitate assessing progress, the program activities are separated into the following general categories for review:

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

This manual suggests 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.

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 and nutrition budget and budget specific to IDD program
• Advocacy documents

**Key informant interviews and focus-group discussions**
- Interviews with officials in the Ministry of Health, Industry, Education, and other relevant ministries
- Discussions with IDD program manager and staff
- Discussions with industry representatives (production, import, wholesale and retail)

**Central-level topics**
This section includes suggestions for information to collect through document review and interviews at the central level prior to field visits. This information should be used to gain an impression of the government's degree of commitment, as reflected in policy. In addition, this information should give insight into further advocacy efforts that may be necessary. The following information should be reviewed whenever possible:

1) plans for national advocacy activities to determine whether they target all relevant public and private officials, deliver the appropriate messages (e.g., subclinical and socio-economic effects), and are ongoing;

2) resource allocation within the national plan for nutrition to assess the human and financial resources given to IDD interventions; and

3) advocacy efforts toward gaining awareness and support at the highest political levels outside the national 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**
While most advocacy efforts are directed toward central-level political leaders, similar efforts are needed for provincial and district-level political leaders. Field efforts should attempt to assess what is being done at this level, and what further efforts may be needed, through review of the following:

1) provincial and district work plans and local-level advocacy activities to assess the target audiences, and whether these activities deliver the appropriate messages (as above), and are ongoing; and

2) policy and procedure documents for various large producers or importers to assess whether they reflect a long-term commitment to iodization.

**The Regulatory Environment: Legislation, Regulation, and 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, if any
- Inspection and enforcement records, including protocols and procedures
- Customs records
- National IDD program plan

Key informant interviews and focus-group discussion

- Foods standards officer(s)
- 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 or import, wholesale and retail), trade associations
- Representatives of consumers’ associations

Central -level topics

This section includes suggestions for information to collect at the central level prior to field visits. Much of this information will be available from legal documents on food safety or specific to salt iodization. It is important to assess legislation and regulations carefully to be sure that the wording provides the legal framework to support the iodization effort and enforcement capacity. The following information should be reviewed whenever possible.

1) National legislation and regulations to assess whether they contain essential elements (as illustrated in the checklists). If no national legislation exists or regulations covering salt iodization, the plans and time frame to develop relevant legislation and regulations for salt iodization in the country.

2) Records on importation of salt and potassium iodate to assess both inspection and enforcement, and the tax, tariff environment.

3) Court and ministry enforcement records, to assess the effectiveness and consistency of the government’s enforcement actions, if available. Include interviews with inspection officers and government officials in charge of enforcement to determine whether the government has adequate financial and human resources and tools (such as Protocols
and Procedures) to inspect and enforce legal requirements, and whether inspection and enforcement officers have received adequate training and instruction. Determine whether there are motivational or political barriers to enforcement, and if there are, how they can be minimized (for example by placing the enforcement body elsewhere, relying on consumer activism, etc.).

**Field Assessments**
This section includes suggestions for reviewing field information to assess the degree to which local regulations or ordinances affect salt iodization. Information to be reviewed includes:

1) provincial-level laws and regulations, to assess essential elements and consistency with existing or proposed federal legislation;

2) records on the frequency and quality of inspections and effectiveness of enforcement, including identification of problems with enforcement;

3) private-sector perspectives and opinions on the regulatory environment, problems, and suggestions for solutions; and

4) inspection and enforcement protocols and identification of barriers to inspection and enforcement.
Program Monitoring

Monitoring, as used in this manual, is the periodic review of program components to ensure they are functioning properly. 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 to sanction noncompliance.

Much of the information needed here is collected in reviewing the product: 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

Documents to review

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

Key informant interviews and 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 and representatives of consumer groups on awareness of iodine deficiency and iodized salt

Central-level topics

This section includes suggestions for information on monitoring activities to collect at the central level. The suggested topics should help with understanding the strength of monitoring activities and their ability to provide accurate and timely information on both iodized salt production and on household use of iodized salt.

The following information should be reviewed whenever possible:

1) government records on quality assurance of iodized salt, noting the frequency of monitoring, methods used for testing, staff deployed for these tasks, training materials, and the use of monitoring information, including a description of the various ministries
involved, and their responsibilities;

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

3) 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
The following information is collected during field visits to salt iodization plants or import facilities, as well as district or provincial health offices. Information collected is similar to that collected while assessing the production capacity, but focuses on how the program is monitored. Field visits should try to answer these questions: Are data reported accurately enough to ensure consistent iodization? Is there enough information to ensure that household coverage is acceptable? The following information should also be reviewed, whenever possible:

1) the monitoring performed by 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; and

2) quality assurance procedures at production or import facilities, including the type of procedure, frequency, and use over time. Assess monitoring records and use of the data collected (this is done in conjunction with the production review).
Laboratory Capacity

Methods
- Document review
- Laboratory site visits: assessment and observation of operations at both industry and government laboratories
- Key informant interviews

Documents to review
- Standard operating procedures and manuals for all methods performed at industry and government laboratories
- 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 and sample integrity, storage conditions, etc.)
- Inventory records (procurement records, reagents, diagnostics, consumable items, etc.)
- Technician training and performance records

Key informant interviews and focus-group discussions
- 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 there is no official laboratory, talk to staff responsible for QA)

Central-level topics
This section covers suggestions for information to collect at the central level on the national capacity to analyze samples relevant to the salt iodization program. This should include assessment of national and more distant laboratory capacity, the potential for inaccurate results because of poor quality control, and issues related to reagents, receipt of samples reporting, and sustainability. The following information should also be reviewed, whenever possible:

1) The ability (and reliability) of the laboratory or laboratories officially identified (by law) to provide analytical services for the national program. Going through similar procedures at production sites.

2) The relationship between the laboratory, its host institution (e.g., government lab, university, hospital, etc.), and the government IDD program, including an assessment of how much support the laboratory receives at the financial, program, administrative level.
3) Perceptions about the laboratory's role, by those in the lab, and by those contracting its services (How do outsiders such as program managers, MOH and donor officials view the laboratory's role, the quality of its work, and the level of support it needs to do the job? How do those within the laboratory view these same issues?); also determine whether any critical and divergent perception gaps exist and the reasons why.

4) The quality, integrity and timeliness of all data produced by the laboratory; lab documentation and records to assess whether essential quality assurance and control practices are routinely employed, summarizing the functions and services that the laboratory presently performs and detailing the main barriers and obstacles that limit the quality or productivity of the laboratory.

5) The relationship between provincial and central laboratory services, including assessment of sample exchange for quality assurance and other aspects of mutual support.

*Field assessments*

This section includes suggestions for information to review from provincial laboratory visits, and from discussions with provincial and district health staff. In some instances, all samples will utilize the central laboratory, while in others there may be more reliance on provincial labs. Information similar to that described above should be collected, as well as the following:

1) The responsibility of the provincial lab to contribute to national monitoring efforts, including assessment of frequency of sample analysis, and coordination with central lab.

2) Actual laboratory functions and operations being conducted at the time, including internal quality control measures.

3) As noted in Section I (The Product), industry laboratory capacity, including the relationship between industry labs and central labs.
Information, Education, and Communications

This section is designed to review whether consumer behavior change objectives are being met and to suggest areas for improvement, if necessary. There are many elements in a plan to change behavior patterns from consumption of salt to consumption of iodized salt; therefore, the plan may need to address issues affecting consumption at the household level as well as issues affecting the availability of iodized salt, by working with producers, wholesalers and retailers. They may be thought of as "customers" of the salt iodization program. These "customers" ultimately serve final product (i.e. iodized salt) to "consumers", which can be broadly considered as consisting of 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 iodized salt, but iodized 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, in assessing the strengths and weaknesses of the information, education, and communication activities, it is important to know whether the overall IDD program goals are being met (e.g., are households using iodized salt?) and whether the marketing plan is correctly addressing any weaknesses. If producers and retailers have made iodized salt available, and consumers have been educated adequately about the importance of iodized salt, but are still not consuming it, then the “marketing mix” of product, price, distribution (place), and promotion needs to be examined and adjusted to address consumer needs. 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 on the basis of the data available to them.

This section also includes a review of inclusion of materials on 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 and focus-group discussions**

* Producers, importers, wholesalers and retailers
* Consumers at the institutional or household level
* Officials responsible for developing marketing plans
* Individuals involved with message development and distribution
* MOE representative
* teachers (field visits)
* school children (field visits)
* educational curriculum committees

**Central-level topics to cover**

This section includes suggestions for information to collect at the central level on the ability of the program to: a) understand consumer demand for iodized salt and address weaknesses in that demand; b) understand awareness and motivation among those in production or importation and distribution (to ensure supply); and c) build awareness of the importance of iodized salt through modification of educational curricula.

**For IEC**

1) The overall national marketing plan for salt iodization, to determine the objectives for the plan for each target audience. Review the plan for influencing both providers and consumers, as noted above.

2) Available data on the response of the target audiences to the marketing activities, including 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.

3) Background information on consumers, and the ways in which the marketing plan may or may not address consumer issues.
4) Documents on sales objectives, costs, competition, and profit margins for providers. Assess the degree to which the marketing plan addresses these issues.

5) Issues related to 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).

For educational curriculum modification
1) Primary, secondary, undergraduate, graduate, professional, and technical school curricula, to determine whether the importance of iodine in the diet is covered, whether awareness of iodine deficiency’s effects on intellectual and socioeconomic development is given prominence, and whether prevention strategies are presented clearly.

2) Government training program documents, to assess whether they cover the significance of iodine in the diet, and the adverse effects of IDD (as above) and are clear on the responsibilities of health care workers in monitoring program activities.

3) MOE level of commitment and advocacy efforts, to assessing whether high-level officials are aware of the importance of correcting iodine deficiency and are committed to using the educational system to address the problem.

Field assessments

This section includes suggestions for information to collect during field visits, on the degree to which national IEC and educational curricula efforts are effective. Field visits should include interviews and focus-group discussions to determine whether there are significant gaps in the overall marketing plan to ensure both adequate supply and adequate demand, and to ensure that educational institutions incorporate information on IDD.

For IEC
1) Determination, from the central-level assessment, of key groups to interview. They might include producers, wholesalers, retailers, or consumers. Discussions should be designed to confirm impressions and suggest areas for improvement.

2) Data on iodized salt availability and consumptions. Discuss the constraints to progress toward marketing objectives.

For curriculum review
1) Interviews with the district education officer (DEO), teachers, and primary school children; the district health officer (DHO) and district staff (including village workers if possible); and a group of agricultural extension workers.
2) Determination of the level of awareness on the importance of iodine and of consuming iodized salt displayed by the DEO, 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.

3) Evaluation of 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.
Management and Program Administration

Methods
* Document review
* Key informant interviews
* Budget analysis

Documents to review
* National nutrition plan of action
* Organizational structure of ministries of health, industry, education, and related ministries
* Nutrition division work plan, budget and staffing documents

Key informant interviews and focus-group discussions
* National staff, including those in ministry of planning and finance
* Selected provincial and district staff

Central-level topics to cover
This section provides suggestions for information to review on issues related to overall program management. Many of the details for assessing management have been covered in previous sections (such as staffing patterns and budget allocation for various aspects of the program). Information collected in this section should help assess whether there are significant managerial issues requiring attention. The following information should be reviewed:

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

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

3) Strategic planning activities, including mechanisms for sustainability, monitoring, and evaluation.

Field assessments
This section provides suggestions for information to review during field visits. Field work should include focus group discussions with those implementing the program, focusing on the degree to
which they are given decision-making responsibility, and potential obstacles to carrying out their work. The following information should be reviewed:

1) Provincial and district management strategies, including degree of autonomy at each level (control over budget, defined job descriptions).
2) Use of ancillary staff, like village health workers, and their responsibilities in program implementation and monitoring.
3) Logistics and supply issues for materials; central support for district staff field work in monitoring; and other support issues facing district staff.
Section III  The Progress: Measuring Progress in Coverage and Impact

Objectives
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 biological indicators in school children, as well as household and retail shop iodized salt coverage

To provide a summary analysis of these data with respect to WHO criteria for the magnitude of the public health problem

Introductory note:
Ultimately, national program efforts must result in the elimination of iodine deficiency, as measured by specific indicators. For given populations, clinical and biological indicators (often called impact indicators) such as goitre grade by palpation and urinary iodine, are used to determine the prevalence of iodine deficiency. Coverage indicators (often called process indicators), such as household use of iodized salt, are used to determine 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 assessment may be based on existing data. Where current prevalence data have not yet been collected and analyzed, it may be necessary for additional team members, specifically dedicated for this purpose, to conduct surveys and analyze the result.(WHO/UNICEF/ICCIDD, 1994, 1996; WHO, 1996).

It is important to review the most recent recommendations from WHO, as there are some concerns about how well certain indicators characterize different populations. For example, it appears that palpation may overestimate the degree of iodine deficiency in formerly endemic populations that have successful interventions.

Methods
- Document review
- Field assessments of district health office data
- Population-based surveys, 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 included in demographic or multiple-indicator surveys)

- Routine health management information system data
- Laboratory reports on quality assurance and routine data analysis

**Key informant interviews and 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 topics to cover**
This section includes suggestions for information to collect at the central level prior to field visits. Much of this information will be available from various documents, while some will be obtained through interviews with selected individuals. The objective is to create a picture of the prevalence of iodine deficiency over time. It is important to assess the accuracy of current estimates, the degree to which they are representative of the overall population, and the consistency between indicators in prevalence trends over time. The following information should be reviewed, whenever possible:

1) 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.

2) Reports from national, provincial, or district surveys that include indicators for iodine deficiency, assessing methodology to determine consistency, quality of data collection and analysis, as well as trends over time. (Reports may include surveys specifically for micronutrient deficiency, or surveys that have included selected variables. EPI, demographic health, and health indicator surveys may include information on household use of iodized salt and goiter prevalence.)

3) Laboratory reports, including analysis from routine collection, along with any information concerning neonatal screening for hypothyroidism, including laboratory methods and quality assurance procedures (also see Section 2, Laboratory Capacity).

4) University and NGO reports on small-scale surveys, concentrating on the indicators assessed and the methods used.

**Field assessments**
Information collected during field visits, primarily to district or provincial health offices can help
assess the accuracy of routine reported data and allow for discussion of survey results from the perspective of provincial and district staff. This additional information may help form an overall impression of household iodized salt coverage. The following information should be reviewed whenever possible:

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

2) Availability and demand for iodized salt in retail shops, with attention to consumer concerns, consistency of supply, and competition from other non-iodized brands.

**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 to assess biological progress with respect to the 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. On the basis of logistic simplicity, the following indicators are recommended, with data collected from schoolchildren, age 6-12 years, in a representative selection of schools, and from retail shops in the same villages as the schools (see Appendix 4).

**Impact indicators:** total goitre rate by palpation or ultrasound (clinical)

urinary iodine excretion (biochemical)

**Coverage indicators:**

iodine content of salt (parts per million [ppm] by titration) through analysis of salt samples brought by school children from their respective households

iodine content of salt (ppm by titration) through analysis of salt samples collected from a representative sample of retail shops, in the same villages as the schools
The Assessment Report

The final report will be an important means of communicating the findings and recommendations. It should include a short executive summary and clear, concise summary 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 assessment. Later, the final report can be distributed more widely to donors, implementers, and others as determined by the program manager.

A suggested format for reporting country progress

<table>
<thead>
<tr>
<th>Executive Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief summary of findings, analyses and recommendations.</td>
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</table>

<table>
<thead>
<tr>
<th>Summary Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key recommendations for strengthening and sustaining the program.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>In this section, a brief summary of information on the country is collected and recorded. It should provide a very brief 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, including an estimated health budget, and the budget for iodine deficiency elimination program activities, including the budget for the universal salt iodization (USI) component. It may be interesting to plot an historic time line marking significant program activities for the past 10-20 years.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Summary of Progress: The Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>This section should summarize information on all aspects of salt production or imports. It 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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Summary of Progress: The Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>This section should summarize all elements necessary for the long-term continuation of the program. The focus should be on elements that are the direct responsibility of the national IDD program, or of other branches of the government. This should include assessments of each element’s strengths and weaknesses, with specific suggestions for improvement. Summary recommendations related to the process might be elaborated.</td>
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</table>

<table>
<thead>
<tr>
<th>Summary of Improvement in Iodized Salt Coverage and Prevalence of IDD</th>
</tr>
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<tbody>
<tr>
<td>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 for the relevant sections are provided.</td>
</tr>
</tbody>
</table>

For each section, the checklists provided in appendices one to three include summary data for each program element. These summary tables can be included as part of the assessment report.
References


MI. 1995. Workshop on Salt Iodization for Small Producers of Salt from West Africa. The Micronutrient Initiative, Ottawa, Canada.


WHO, UNICEF, ICCIDD. 1996. Review of Findings from a Seven-country Study in Africa on Levels of Salt Iodization in relation to Iodine Deficiency Disorders, including Iodine-induced


WHO. 1997. Elimination of Iodine Deficiency Disorders in South-east Asia. WHO Project ICP NUT 001, New Delhi, India.
Appendices

Appendix 1 Checklist for Assessing the Product

The following checklists are designed to assist with information collection and tabulation for salt production or import and iodization. Some questions may not be relevant to the national situation; others may be repeated in other sections. The checklists are designed to help form an impression of salt production or imports, and determine areas of strength as well as areas that might be vulnerable as the program matures.

Summary Data

<table>
<thead>
<tr>
<th>Estimated salt requirements:</th>
<th>The Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>population: ____</td>
<td>grams/person/day: ____</td>
</tr>
<tr>
<td>total estimated need: ____ (tons/year)</td>
<td>estimated livestock need: ____ (tons/yr)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Production capacity:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>number of producers (for 80% of production):</td>
<td>average capacity: ____</td>
</tr>
<tr>
<td>total capacity: ____ (tons/year)</td>
<td>% of facilities gov't owned: ____ (%)</td>
</tr>
<tr>
<td>number of importers</td>
<td>% of nat'l requirement imported: ____ (%)</td>
</tr>
<tr>
<td>imported as iodized?</td>
<td>list major importers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Iodization:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>method: Spray  Dry Mix  Other</td>
<td>Total number of iodization units: ____</td>
</tr>
<tr>
<td>average age of units: ____ (years)</td>
<td>Number functioning currently: ____</td>
</tr>
<tr>
<td>Locally manufactured?</td>
<td>Estimated unit cost: ____ (US$)</td>
</tr>
<tr>
<td>Gov't subsidized?</td>
<td>total production: ____ (tons/year)</td>
</tr>
<tr>
<td>% of total requirement: ____ (%)</td>
<td></td>
</tr>
</tbody>
</table>

| Potassium iodate requirements:               |                             |
| Nat'l KI0 standard: ____ ppm;                | human requirement: ____ (tons/yr); |
| livestock requirement: ____ (tons/yr)        | total KI0: ____ (tons); |
| annual expenditure on KI0: ____ (US$)        | Gov't or agency subsidized? |

Information checklist for central-level assessment  (Note: this information may be available from various documents, or may be collected during field visits to major production facilities.)

1) Iodized salt producers/importers are able to meet the nation's tonnage needs.
(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.
(Compare amount of iodized salt produced and imported with amount sold by producers and importers over past year; show figures):

3. Describe the production, importation, and wholesale distribution scheme for iodized salt.
(Describe whether most salt is produced or imported from several large producers and importers. Estimate the number of producers or importers meeting 80% 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.
(Compare capacity on the basis of 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.
   (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.
   (Describe import capacity; show figures):

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

9. Comprehensive analysis of consumer preferences has been done, including review of cultural practices, product preferences and reasons for these preferences, concerns, and price considerations, and this information is available to producers or importers.
   (Describe how this information was collected and analyzed):

10. Existing data suggest that marketing objectives (of both government and industry) for consumption are being met, and that both institutional and household consumers have been effectively motivated.
   (Discuss qualitative information on household use of iodized salt and compare with monitoring data on this and with consumption objectives.)

**Information checklist for field-level assessment** (Note: This information is most likely collected from interviews during visits to production facilities.)

*Producer and importer awareness and commitment*

11. Salt producers and importers are aware of IDD, its impact on the population, including workers, and the importance of iodization.
   (List number of producers and importers interviewed, their location (urban or rural) and size (small, medium, or large), the proportion interviewed who are aware of IDD, and briefly describe the level of their awareness.)

12. Producers and importers are aware of the legal requirements for salt iodization (e.g., mandatory iodization, iodate levels, QA, packaging, labeling, inspection regulations).
   (Explanation as above):

13. Producers/importers express a genuine desire to iodize salt and meet iodization standards.
   (Use subjective judgment to assess motivation and sincerity.)

14. Industry marketing plans define the target audience(s) and have clear objectives for each, including specific segments.
   (Briefly describe marketing plan and target groups):
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.
(Show proportion interviewed that were motivated.):

16. Producers and importers believe there is adequate consumer demand for iodized salt.
(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, know how to, and do use them correctly.
(Review number of kits ordered and distributed to producers by government and agencies, proportion of producers interviewed and observed with access to kits, and proportion that use them correctly.):

18. *Importers* have rapid salt test kits available to them, know how to, and do use them correctly.
(Explanation as above):

19. *Large-scale* producers and importers have titration equipment available, use it correctly, and have an overall quality assurance plan.
(Show proportion of large scale producers and importers interviewed that have titration equipment and use it correctly; and whether government or agencies subsidize this equipment — include figures from their records.):

20. Standards for internal quality assurance by producers and importers are defined, understood and carried out by the staff of the large-scale producers and importers.
(Show proportion of large producers and importers interviewed that have written QA procedures and trained staff to carry them out.):

21. Standards for internal quality assurance by producers and importers are defined, understood and carried out by small- and medium-scale producers and importers.
(Show proportion of small- and medium-scale producers interviewed that have written QA procedures and trained staff to carry them out.):

22. Producers’ laboratories generally have sufficient reagents and diagnostic kits to perform the required testing in good time.
(Describe any recurring problems.):

23. Laboratory staff have adequate levels of training and expertise to undertake the tasks expected of them.
(Describe how often training occurs, what is covered, who attends, the level of supervision, etc.)

24. Producers validate mixing procedures periodically as part of their QA practice.
(Show proportion of producers interviewed and observed that routinely validate mixing procedures; comment on the size of the producers that typically do and do not do this, and how often they validate mixing procedures.):

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

27. Producers routinely inspect equipment and replace parts (spray nozzles for example) as indicated. (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. (Show proportion of producers interviewed and observed that review their records and take prompt corrective action in good time.): 

29. Routine lot or batch testing of salt is being performed at the time of importation; results are recorded and available for inspection. (Explanation as above):

30. Producers and repackers use proper packaging materials (according to legal requirements). (Show proportion packages inspected that have proper packaging and show government inspection figures of number of samples found to not be properly packaged.):

31. Labels on packages contain adequate and accurate information (e.g., name of producers, lot and batch numbers, potassium iodate in ppm or milligrams per kilogram (mg/kg), and other information required by the law and regulations). (Show proportion of packages inspected that are labeled properly and show government inspection figures related to the 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.). (Describe typical storage conditions and time and show proportion of those visited that store iodized salt properly.):

33. Packaged salt and storage areas are inspected periodically as part of QA prior to distribution. (Show proportion of producers and importers interviewed that routinely inspect packaging and storage areas.):

34. Iodized salt is distributed on a first-in, first-out (FIFO) basis at major production or importation sites. (Show proportion of those visited that follow FIFO principle.):

35. Producers are able to obtain iodization equipment at an affordable cost. (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 favourable terms (e.g., not taxed as a drug). (Explanation as above.):

37. Producers maintain adequate stocks of materials, including potassium iodate and packaging. (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 generally confirms the presence of an adequate range of iodine in the salt. (Show proportion of tests performed yielding a positive result.):
Persons met and interviewed, documents reviewed
List names, titles, and occupations, and location (by city or village) of all persons interviewed
List all documents reviewed
Appendix 2 Checklist for Assessing the Process

A. Policy and Advocacy Issues

Summary Data

<table>
<thead>
<tr>
<th>The Process: Policy and Advocacy Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Highest level of ongoing commitment:</strong> ______________(position)</td>
</tr>
<tr>
<td><strong>Date of most recent national advocacy event:</strong> __________(MM/DD/YY)</td>
</tr>
<tr>
<td><strong>Participant profile at advocacy events:</strong> __________________________</td>
</tr>
<tr>
<td>__________________________________________________________________________</td>
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<tr>
<td><strong>Key sectors committed:</strong> ________________________________________________</td>
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<tr>
<td>__________________________________________________________________________</td>
</tr>
<tr>
<td><strong>District or local advocacy events?</strong></td>
</tr>
</tbody>
</table>

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

1. There is an advocacy plan and ongoing activities for gaining commitment to addressing iodine deficiency from high-level political leaders, including the head of state, the ministers of health, industry, customs, and education, as well as senior members of other relevant ministries. 
   (Briefly describe the plan.): 

2. Awareness activities emphasize mental impairment, school performance, human and livestock productivity as well as the socioeconomic consequences of IDD.

3. There is a similar plan and activities targeted toward members of the lawmaking body.

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

5. The health and nutrition budgets in the current national plans reflect adequate financial commitment to addressing IDD. 
   (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 engage it actively in iodized salt production or importation, marketing, and distribution efforts. 
   (Describe communications activities.): 

7. There has been a national advocacy event within the past 12 months. 
   (Describe key persons who attended, by title or affiliation): 

8. High-level government officials or politicians have mentioned IDD prevention in speeches or addresses within the past 12 months. 
   (Give titles or affiliation, and nature of the event.):
9. There are plans for ongoing national advocacy events.
(Briefly describe the planned events.):

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

Persons met and documents reviewed, in assessing policy and advocacy issues

List names, titles or occupations, and location (by city or village) of all persons interviewed
List all documents reviewed
B. The Regulatory Environment

<table>
<thead>
<tr>
<th>Summary Data</th>
<th>The Process: The Regulatory Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iodization mandated by law or regulations? Date of enactment____</td>
<td></td>
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<tr>
<td>Iodization levels established:</td>
<td></td>
</tr>
<tr>
<td>production or imports: @____ppm</td>
<td></td>
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<tr>
<td>@____ppm</td>
<td></td>
</tr>
<tr>
<td>wholesale</td>
<td></td>
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<tr>
<td>@____ppm</td>
<td></td>
</tr>
<tr>
<td>retail</td>
<td></td>
</tr>
<tr>
<td>Packaging and labeling standards established?</td>
<td></td>
</tr>
<tr>
<td>Inspection and enforcement procedures outlined and responsibilities assigned and carried out?</td>
<td></td>
</tr>
<tr>
<td>Regulatory environment acceptable to industry?</td>
<td></td>
</tr>
<tr>
<td>QA by industry required by the law or regulations and routinely practiced?</td>
<td></td>
</tr>
</tbody>
</table>

Information checklist for central assessments

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

2. The law empowers the MOH or another 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).
   (Include comments, show levels required and compare to WHO/UNICEF/ICCIDD recommendations for levels.):

3. The law addresses packaging and labeling requirements generally.

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

5. The ministry is given broad inspection and investigative powers.
   (State name of ministry responsible.):

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

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

8. The law requires licensure or registration of salt producers, importers, and retailers.
   (Describe the licensing procedures, and the degree to which producers appear to comply.):

9. Imported iodized salt is not taxed at an unfavorable rate, nor is potassium iodate (e.g., as a drug, at a higher rate).
   (Comment on situation for imported salt and for potassium iodate.):
National regulations
10. The regulations implementing the law set out the specific standards for salt iodization, including appropriate levels of potassium iodate at production, import, wholesale, and retail.

11. The regulations specify appropriate packaging materials to be used for packaging iodized salt (e.g., polypropylene or other nonporous material (lined with high-density polyethylene), and establish labeling requirements (e.g., to include the manufacturer's license number, lot and batch numbers, the level of KIO₃ in ppm or mg/kg)
(Comment on packaging and labeling, 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.).

13. The regulations require producers and importers to engage in routine quality assurance and to keep records of QA activities.
(Comment on quality assurance requirements for producers and importers):

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

Inspection and enforcement
15. The government unit(s) charged by law with inspecting and enforcing legal requirements for foods conduct(s) routine and periodic inspections of salt producers and importers and retailers (Describe how often, on an annual basis, for each):

16. Inspections are unannounced.

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

18. The lines of authority for inspections and enforcement are clearly understood by central-level staff and officers in the field, and among inspecting ministries or organizations.
(Describe those responsible for inspections and those 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 salt producers, importers, and retailers and they have adequate resources (e.g., transport to inspection sites, etc.)
(Compare staff available to the estimated number needed to conduct yearly inspections of every producer and importer and a random sample of retailers, and describe training of their duties):

20. Salt samples taken by inspectors are sent to government-approved labs and analyzed in a timely fashion.
(State the typical time period for analysis):

21. Samples are handled in accordance with legal requirements so they can be used as evidence in enforcement proceedings.
(Compare typical handling with the legal requirements for handling):
22. When noncompliance with legal requirements is found, the government takes enforcement action consistently, within the time frame determined by the law. (Show how many enforcement actions were taken over past 12 months; state whether anyone is given favourable treatment and under what circumstances):

23. The majority of enforcement actions undertaken are upheld by the court or administrative body that hears the action. (Show proportion of actions overturned, describe why they were overturned, and give time frame for the process):

24. There are no major constraints (such as political constraints, corruption, staff availability, etc.) that prevent effective enforcement action. (Describe any constraints):

25. Enforcement actions taken seem to have the effect of deterring noncompliance in the future. (Show proportion of industry representatives interviewed that feel that they will be sanctioned if they violate the law. Review the number of repeat offenders):

**Information checklist for field assessments**

**Provincial or local laws and 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.

**Provincial and local inspection and enforcement**
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). (Describe the mechanism):

28. Enforcement is effective at the local level. (Describe strengths and weaknesses):

**Industry perspective on the legal environment**
29. Producers and retailers express a sincere desire to comply with legal requirements. (Show proportion of those interviewed that express this desire):

30. Industry representatives understand the legal requirements and believe the law and regulations establish appropriate requirements and standards that they can meet. (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. (Show proportion interviewed that believe this):

32. Industry representatives believe that government laboratory results are reliable. (Show proportion of those interviewed that believe this):

33. Industry representatives believe they should be provided with additional incentives. (Describe desired incentives):
34. Industry representatives believe that there are no provisions that act as a disincentive to iodizing salt.
(Describe relevant provisions):

35. Consumers are empowered to take action under the law, either administratively or directly in court, when they purchase salt that does not meet legal requirements.
(Describe any actions taken by consumer groups):

36. Industry representatives had significant input into the development of the national or local law(s) and regulations.
(Describe opportunities for input):

**Persons met and documents reviewed, in assessing the regulatory environment**

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

<table>
<thead>
<tr>
<th>Summary Data</th>
<th>Program Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is a monitoring system in place?</td>
<td>Is it comprehensive?</td>
</tr>
<tr>
<td>Are quantitative data collected routinely?</td>
<td>Are qualitative data included?</td>
</tr>
<tr>
<td>Is monitoring information shared in a timely manner among the sectors responsible for program implementation and policy development?</td>
<td></td>
</tr>
</tbody>
</table>

**Information checklist for central assessments**

1. A government monitoring strategy exists and is documented.
   (Describe the monitoring strategy, and the key indicators used):

2. The monitoring system is comprehensive in that all program components are monitored by the government.
   (List any components not monitored, along with any reason why they are not):

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

4. There are adequate human resources for the government to perform routine program monitoring.
   (Review the number of staff involved in monitoring and describe comprehensiveness of the monitoring; comment on whether staff are trained adequately to perform monitoring):

5. Monitoring data are communicated in a timely manner to the program staff that need to take corrective action and to the program manager.
   (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 assess program activities properly and make corrections in programming as necessary.

**Information checklist for field assessments**

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

8. Provincial and district-level staff are aware of their responsibilities in the monitoring plan and are performing them.
   (Comment on provincial and district staff responsibilities):

9. Local level staff are aware of their responsibilities in the monitoring plan and are performing them.
10. Monitoring records demonstrate salt testing (with simple testing kits) at the retail or household level (include testing at school).

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

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

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

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

**Persons met and documents reviewed, in assessing program monitoring**

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

Summary Data

| Do central laboratories exist? ____ (#) | Provincial ones? ____ (#) |
| Are the laboratories quality assured? |
| Do the laboratories have sufficient resources (human, equipment, material)? |
| Are the laboratories integrated with other IDD program operations and management? |

Information checklist for central assessments

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

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

6. The quality, reliability, and timeliness of data produced by the laboratory is well-established.
   (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.
   (Describe whether the lab has a role in survey design, what program information is shared with the lab, and the involvement of lab staff at technical meetings):

Information checklist for field assessments

Laboratory capacity and support

8. The laboratories have the capacity to perform the tests essential for monitoring the program.
   (Comment on their capacity test for urinary iodine, TSH serum, TSH bloodspot, T4, Thyroglobulin, and salt iodine content by titration.):

9. The laboratories perform a significant number of tests annually as part of the national monitoring effort.
   (Comment on the number of tests performed):
10. All instrumentation is currently in good working order. (Describe any recurring problems experienced, 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 or cooling, and reagent security. (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 and diagnostic kits to perform the required testing in a timely fashion. (Describe any recurring problems):

13. There are no major barriers faced by the laboratory with regard to acquisition of commercial reagents, diagnostics or supplies from outside the country. (Describe any barriers to importation and any attempt to overcome them):

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

15. Given current levels of support (financial and 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. (Describe whether there is any backlog):

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

**Laboratory quality assurance**

18. A comprehensive quality assurance (QA) program has been developed, explained, and is being used by all laboratory staff members. This involves more than simply running some QC samples. QA includes management issues, decision-making, adequacy of staff training, correct documentation, method validation, performance protocols, inventory records and control, instrumentation and equipment checks, determination of quality of samples collected and received, sample flow in the lab (i.e., the time required and procedures used for receiving, recording, storing, analyzing and reporting sample results). (Assess the overall lab program, and describe any areas not covered in QA planning and implementation):

19. Instruments and equipment are checked regularly for performance, accuracy, and validity. (Describe frequency of checks and quality of results obtained; review copies of instrumentation check results, calibration tests, performed when and by whom.):

20. The laboratory has well-written, detailed standard operating procedures (or a manual) for all methods. (Describe how useful lab staff find it):
21. Key documentation is well organized and recorded. Assess results of all individual assays run for each method, log of samples received and 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 stored correctly from refrigerator or freezer temperature charts, and sample database management.

**Quality control**

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

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

24. QC data are analyzed and then used to decide when to accept or reject assay results. Seek evidence showing 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 same samples were then repeated in a later assay that gave QC values in-control).

25. There is ongoing participation in external QC programs or routine sample cross-checking with other laboratories, on the basis of external QC program reports.

**Staff training, expertise, and development**

26. Staff have adequate levels of training and expertise to undertake the tasks expected of them. (Describe how often training occurs, what is covered, who attends, and the level of supervision.):

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 he or she can meet expected protocol standards. (Describe how often and who conducts the evaluation.):

28. The laboratory has developed some type of internal training and skills development and enhancement exercises for staff members. Assess whether a gap exists between the technicians current abilities and level of operation, and what is expected.

**Persons met and documents reviewed, in assessing laboratory capacity**

List names, titles or occupations, and location (city or village) of all persons interviewed. List all documents reviewed.
E. Information, Education and Communication

### Summary data

<table>
<thead>
<tr>
<th>The process: information, education and communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEC strategy exists?</td>
</tr>
<tr>
<td>Funds allocated?</td>
</tr>
<tr>
<td>Industry marketing plan?</td>
</tr>
<tr>
<td>Addresses consumer demand?</td>
</tr>
<tr>
<td>Consumer preferences are well defined?</td>
</tr>
<tr>
<td>Consumers are aware of IDD and the importance of iodized salt?</td>
</tr>
<tr>
<td>Communication efforts pursue behavior change rather than merely awareness?</td>
</tr>
<tr>
<td>Communication and education materials have been evaluated?</td>
</tr>
<tr>
<td>School curricula address IDD and the importance of iodized salt?</td>
</tr>
</tbody>
</table>

### 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.
   (Comment on sales figures and apparent trends)

2. Comprehensive analysis of consumer preferences has been done, including review of cultural practices, product preferences, and reasons for these preferences, fears and concerns, and price considerations. There is collaboration with industry on use of these data.
   (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.
   (Briefly describe strategy)

4. A communications strategy exists with clear objectives for influencing consumer behavior (at the household or institutional level), to increase demand.
   (Briefly describe strategy)

5. Communication channels have been identified, such as media, community-level, face to face, and materials have been developed.
   (Describe main channels and types of materials developed):

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

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

8. Evidence suggests that producers, wholesalers, and retailers have modified their behavior on the basis of the marketing and communication activities.
   (Describe proportion of those interviewed that have been influenced and what influenced them; compare availability of iodized salt today with previous periods):
9. Evidence suggests that consumers have modified their behavior on the basis of the marketing and communication activities.  
(Show proportion who report receiving communications about iodized salt and what influenced them):

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

11. Communication strategies focus increasingly on behavior change rather than simple awareness building.  
(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.  
(Comment on both primary and secondary school curricula):

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.  
(Comment on the strength of the curriculum additions)

**Undergraduate and graduate school curricula**

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

15. These sections highlight more than just the clinical aspects, i.e.: the importance of iodine for intellectual development (as noted above).

**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.

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.  
(Comment on the breadth of the material, and on the accuracy in describing national interventions):

**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)

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.

20. These sections are clear on the impact of and solutions for preventing IDD, and on the responsibilities of each health worker.  
(Comment on how clearly roles and responsibilities are outlined):

**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.

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

**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.
(Describe any concerns expressed):

24. Focus group discussions with heads of households suggest that there are no significant barriers to consumption of iodized salt.
(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.
(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.
(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.
(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 of the role of salt iodization in preventing it.

29. A significant proportion of teachers are aware of, and understand the intellectual consequences of iodine deficiency, and have included the topic in their teaching during the past or present school year.
(Comment on proportion of those interviewed that are aware, and on inclusion of information in the routine curriculum):

30. Most students interviewed understood the importance iodine in the diet and role of iodized salt in preventing IDD.
(Show proportion of those interviewed that were aware and understood):

31. Students who were aware generally shared this information with family members.
(Show proportion who reported sharing information):

32. Students had used or observed the salt test kit in school.
(Show proportion who had 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.
(Comment on the awareness of DHO and staff):

34. The majority of health staff included discussion of iodine and IDD during home visits or in clinic trainings in the past year.
(show proportion that reported inclusion of IDD information):

Agricultural and other district workers
35. Describe the workers interviewed and their level of awareness on 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 serve.
(Show proportion who do):

Persons met and documents reviewed, in assessing information, education and communication issues

List names, titles or occupations, and location (city or village) of all persons interviewed
List all documents reviewed
F. Management and Program Administration

<table>
<thead>
<tr>
<th>Summary data</th>
<th>The Process: Management and Program Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does a management plan exist?</td>
<td>Does plan development involve other sectors?</td>
</tr>
<tr>
<td>Are objectives and responsibilities defined?</td>
<td>Is the budget allocated?</td>
</tr>
<tr>
<td>Does a capacity building plan exist?</td>
<td>Is it being carried out?</td>
</tr>
</tbody>
</table>

Information checklist for central-level assessments

1. There is a comprehensive national program plan for addressing iodine deficiency. (Describe national plan, and where the IDD program fits with relation to other health programs)

2. The plan was developed with input and has clear support from all involved sectors. (Describe who was involved in developing the plan):

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

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.

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

6. There are adequate numbers of staff to carry out all components of the program. (Compare number needed with number available):

7. The plan provides for training and capacity building on a regular basis. (Describe training plan, with anticipated numbers trained for different levels)

8. Training is carried out as planned.

9. The plan provides for adequate support and supervision. (Describe supervisory scheme):

10. Supervision is carried out effectively. (Show proportion of program staff interviewed who believe supervision is effective):

11. Responsibilities at each level and for each component are clearly delineated. (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). (Describe any areas not covered):

13. Budgetary needs are met. (Describe the degree of shortfall, if any):
14. The program budget contains adequate incentives for production, marketing, and distribution of iodized salt.
   (Describe the incentives):

15. The program as planned and executed is sustainable.
   (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.

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

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

19. District offices perform regular supervision and periodic training.

20. The majority of positions related to the program are filled and staff turnover is limited (e.g., staff remain more than two years)
   (Show proportion that do not stay at least two years):

Persons met and documents reviewed, in assessing program management and administration

List names, titles or occupations, and location (by city or village) of all persons interviewed
List all documents reviewed
Appendix 3  Checklist for Assessing the Progress

Checklist for Measuring the Progress in Coverage and Impact

The following checklists are designed to assist with information collection and tabulation for assessing the prevalence of iodine deficiency. They are designed to help form an impression of prevalence and of household iodized salt coverage, determine whether the data are sufficient, and reviewing areas where further prevalence assessment may be needed.

<table>
<thead>
<tr>
<th>Summary data</th>
<th>The progress in coverage and impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goitre prevalence____ Date of last survey____ Level of representation____</td>
<td></td>
</tr>
<tr>
<td>Median urinary iodine____ Date of last survey____ Level of representation____</td>
<td></td>
</tr>
<tr>
<td>Retail iodized salt coverage____ Date of last survey____ Level of representation____</td>
<td></td>
</tr>
<tr>
<td>Household iodized salt coverage____ Date of last survey____ Level of representation____</td>
<td></td>
</tr>
</tbody>
</table>

Information checklist for *central*-level assessment

1. A national baseline survey and a follow-up survey have been conducted. (Give dates, age groups and indicators collected, level of representativeness):

2. The methodology used for the surveys is consistent and adequate to give a representative estimate of the severity of iodine deficiency. (Review sampling methods, sample size, selection of households, data collected, laboratory methods and analysis, and describe any problems with the methodology.)

3. Provincial or district level surveys have been completed (Comments as above):

4. Survey reports include indicators other than only goitre grading by palpation. (Describe indicators used):

5. Iodine deficiency indicators have been included in other types of surveys, such as EPI surveys or Health and Demographic surveys. (Describe which surveys and dates of survey):

6. Coverage data exist for household iodized salt use.

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 areas. (Review sampling methods, sample size, and selection of households; also laboratory methods and analysis should be reviewed to determine adequacy)
Information checklist for field-level assessment

8. District or subdistrict offices have a regular program to review biological indicators.
   (Describe the methods for collection and transport of laboratory specimens)

9. District or subdistrict offices have a regular program to review household salt iodine content.

10. There is a national health management information system that aggregates data on household iodized salt availability or use from district and provincial offices.
    (Describe the system of reporting, degree to which reports are received and aggregated, and strength of system in giving a picture of trends over time)

Persons met and documents reviewed
List names, titles or occupations, and location (by city or village) of all persons interviewed
List documents reviewed
Appendix 4  Conducting a Rapid Independent Survey

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

To determine the proportion of households using adequately iodized salt (iodine content of salt in ppm by titremetric 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.

Selection of School Children

Once school selection is completed, a list of the schools and their location is prepared. For each school, a list of all children age 6 to 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 goitre grade 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.

Selection of Household and Retail Shop 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 goitre grade are then tested for iodine content with 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 with field test kits and also saved for analysis by titration at the provincial or central laboratory (UNICEF, PAMM, MI, ICCIDD, 1995).

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

### Simplified Classification of Goitre

<table>
<thead>
<tr>
<th>Grade 0:</th>
<th>No palpable or visible goitre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1:</td>
<td>A mass in the neck that is consistent with an enlarged thyroid that 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</td>
</tr>
<tr>
<td>Grade 2:</td>
<td>A swelling in the neck that is visible when the neck is in a normal position and is consistent with an enlarged thyroid when the neck is palpated</td>
</tr>
</tbody>
</table>


### 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 (1993).

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 goitre, by age and grade, in school children
- Median urinary iodine values and distribution in school children
- Iodine content of salt samples from households and retail shops
Appendix 5  Sample Questionnaires

Retail Shop Owners or Managers
Knowledge, attitude, practice and behavior (KAPB) survey questionnaire

1. **Where do you buy salt?** (Check all that apply, and specify approximate distance, in km, from the place of procurement.)

   a) Another shop in the same town/village ________
   b) Another shop in nearby town ________
   c) From the wholesale shop in district ________
   d) From weekly market ________
   e) Others: (specify) ________

2. **How often do you buy salt?** (Check the one that usually applies)

   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 available in shops** (observation by interviewer)

<table>
<thead>
<tr>
<th>Available</th>
<th>iodized</th>
<th>labeled</th>
</tr>
</thead>
</table>
   a) HDPE bags (50-70 kg.) | Y | N | Y | N | Y | N |
   b) Jute bags (50-70 kg.) | Y | N | Y | N | Y | N |
   c) Small plastic packets (½ kg., 1 kg., 5 kg) | Y | N | Y | N | Y | N |

4. **What types of salt do you sell, and what is the price per kg?**

   a) Large crystal salt Price per kg_______ Y | N
   b) Small crystal salt Price per kg_______ Y | N
   c) Powdered or highly refined salt Price per kg_______ Y | N
d) Others: Specify________

Price per kg_______

Y  N

5. Where do you store salt?

a) Warehouse

______  ________

b) Inside the shop

______  ________

c) Outside the shop

______  ________

d) Other (specify)

______  ________

6. How do you store salt?

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 answer)

a) Goitre

______

b) Cretinism

______

c) Mental retardation

______

d) Don't know

______

e) Other: Specify

______

8. Have you heard about iodized salt? Y  N

If yes from whom? (Check all that apply; please 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, write the response verbatim)

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

10. **Are you aware of any regulations regarding the sale of salt?**  Y  N

**Can you describe the key elements of these regulations?** (Write the answer verbatim also)

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

11. **Have you ever had difficulty obtaining iodized salt?**  Y  N

12. **If you normally stock iodized salt, when was the last time you did not have iodized salt to sell?**

a) **Always have stock on hand**

b) **Stock out within past month**

c) **Stock out within past 6 months**

d) **Stock out more than 1 year ago**

13. **Has salt been sampled from your shop in last 6 months?**  Y  N

**By whom?** (specify)_______
1) **Where do you buy salt from?**

   a) Local shop in the same town/village
   b) Another shop in nearby town
   c) From the wholesale shop in 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, and what is the price per kg.?**

   a) Large crystal salt
   b) Small crystal salt
   c) Powdered or highly refined salt
   d) Other: (Specify)

<table>
<thead>
<tr>
<th>Type of Salt</th>
<th>Price per kg</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large crystal salt</td>
<td>Price per kg</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Small crystal salt</td>
<td>Price per kg</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Powdered or highly refined salt</td>
<td>Price per kg</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Other: (Specify)</td>
<td>Price per kg</td>
<td>Y</td>
<td>N</td>
</tr>
</tbody>
</table>

3. **How do you buy salt?** (If required, please tick multiple answers)

   a) Loose
   b) Plastic bag packets (1-5 kg. size)
   c) Full bag (50-70 kg size)

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 5 kg  

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 lid  

b) Container without 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. If required, please tick multiple answers)

a) Goitre  

b) Cretinism  

c) Mental retardation  

d) Don't know  

e) Other: (Specify)  

9. Have you heard about iodized salt?  

Y  N

If yes from whom? (Please do not suggest answers. If required, please tick multiple answers)
a) Health worker 

b) Radio 

c) Neighbors 

d) Own child 

e) Another shop keeper 

f) Others: (Specify) 

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

__________________________________________________________________________
__________________________________________________________________________

11. **When was the last time that iodized salt was not available, when you went to buy some?**

a) Always available 

b) Never available 

c) Not available within last 1 month 

d) Not available within last 6 months 

e) Not available within last 1 year 

12. **Are you aware of any regulations regarding the sale of salt?** Y N

(Write the answer verbatim also)

__________________________________________________________________________
__________________________________________________________________________

13. **What livestock do you have at home?**

   total number owned

   a) Cow 
   
   b) Buffalo 
   
   c) Bullock 
   
   d) Goat/sheep 

e) Poultry

f) Others: (specify)

g) None

14. Do you feed the same salt to livestock?

a) Same salt is given

b) Different salt is used

c) Salt is not given
WHO Criteria for Assessing progress towards eliminating IDD as a public health problem (selected indicators)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Salt iodization</td>
<td></td>
</tr>
<tr>
<td>Proportion of households consuming effectively iodized salt</td>
<td>&gt; 90 %</td>
</tr>
<tr>
<td>2. Urinary iodine (median value, school children)</td>
<td></td>
</tr>
<tr>
<td>Proportion below 100 µg/l</td>
<td>&lt; 50 %</td>
</tr>
<tr>
<td>Proportion below 50 µg/l</td>
<td>&lt; 20 %</td>
</tr>
<tr>
<td>3. Thyroid size (school children, 6-12 years of age)</td>
<td></td>
</tr>
<tr>
<td>Proportion with enlarged thyroid by palpation</td>
<td>&lt; 5 %</td>
</tr>
</tbody>
</table>
## Appendix 7 Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDD</td>
<td>Control of Diarrheal Disease (program)</td>
</tr>
<tr>
<td>CEE/CIS</td>
<td>Central and Eastern Europe/Community of Independent States</td>
</tr>
<tr>
<td>DEO</td>
<td>District Education Officer</td>
</tr>
<tr>
<td>DHO</td>
<td>District Health Officer</td>
</tr>
<tr>
<td>EPI</td>
<td>Expanded Program for Immunization</td>
</tr>
<tr>
<td>FIFO</td>
<td>first in first out warehouse inventory procedure</td>
</tr>
<tr>
<td>HDPE</td>
<td>high density polyethylene</td>
</tr>
<tr>
<td>ICCIDD</td>
<td>International Council for the Control of Iodine Deficiency Disorders</td>
</tr>
<tr>
<td>IDD</td>
<td>iodine deficiency disorders</td>
</tr>
<tr>
<td>IEC</td>
<td>information, education, and communication</td>
</tr>
<tr>
<td>ISPAT</td>
<td>Iodized Salt Program Assessment Tool</td>
</tr>
<tr>
<td>KAPB</td>
<td>knowledge, attitude, practices, and beliefs</td>
</tr>
<tr>
<td>KIO$_3$</td>
<td>potassium iodate</td>
</tr>
<tr>
<td>MI</td>
<td>Micronutrient Initiative</td>
</tr>
<tr>
<td>MOE</td>
<td>Ministry of Education</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>NGO</td>
<td>non-governmental organization</td>
</tr>
<tr>
<td>NUT</td>
<td>p. 26</td>
</tr>
<tr>
<td>OMNI</td>
<td>Opportunities for Micronutrient Interventions</td>
</tr>
<tr>
<td>PAMM</td>
<td>Program Against Micronutrient Malnutrition</td>
</tr>
<tr>
<td>PPM</td>
<td>parts per million</td>
</tr>
<tr>
<td>PPS</td>
<td>population proportionate sampling (proportional to population sampling)</td>
</tr>
<tr>
<td>QA</td>
<td>quality assurance</td>
</tr>
<tr>
<td>QC</td>
<td>quality control</td>
</tr>
<tr>
<td>SIP</td>
<td>salt iodization plant</td>
</tr>
<tr>
<td>SOP</td>
<td>standard operating procedures</td>
</tr>
<tr>
<td>T4</td>
<td>thyroxine</td>
</tr>
<tr>
<td>Tg</td>
<td>thyroglobulin</td>
</tr>
<tr>
<td>TSH</td>
<td>thyroid stimulating hormone</td>
</tr>
<tr>
<td>UIE</td>
<td>urinary iodine excretion</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>USI</td>
<td>universal salt iodization</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>