

**Report of ICCIDD Review Mission in Viet Nam
Between
25th – 28th February 2013
And
6th – 16th May 2013**



(Workers packing Iodised Salt in Thanh Hoa, Viet Nam)

Prepared by: Prof Creswell J Eastman: Clinical Prof of Medicine Sydney Medical School and immediate past ICCIDD Vice Chairman and Regional Coordinator Asia Pacific region

A/Prof Gary Ma: School of Medicine, University of Western Sydney and current Acting ICCIDD Regional Coordinator Asia Pacific Region

A/Prof Mu Li: School of Public Health University of Sydney and Board Member ICCIDD



Executive Summary

In 2012, a joint ICCIDD/UNICEF/WHO mission undertook a comprehensive review of the 'Status of the National Iodine Deficiency Control Program in Viet Nam – assessing its past achievements, current status, challenges and opportunities'. A number of recommendations were made including the immediate revision of current Decree 163 to stipulate that all edible salts for human and animal consumption must be iodised. In addition to that the mission recommended there should be a practical and effective laboratory network put in place to ensure all iodised salt produced in Viet Nam is of high quality and iodised at a safe level.

The Government of Viet Nam and UNICEF responded to the report requesting a team of international Iodine Deficiency Disorders (IDD) professionals to identify and revitalise the once well managed laboratory network and the iodisation facilities to produce iodised salt for long term sustainability and ultimate elimination of IDD in Viet Nam.

The report of this mission provides the findings of an expert ICCIDD review team that visited Viet Nam between 25th – 28th February 2013 and 5th - 16th May 2013 to assess the capacity of the laboratory network and to design a functional monitoring system for the IDD prevention and control program in Viet Nam. The assessment was in consultation with UNICEF and the Ministry of Health (MOH) of Viet Nam. At the end of the mission, the ICCIDD review team has made the following recommendations which have been discussed with appropriate Government Health authorities in Viet Nam and UNICEF. The preliminary findings and recommendations were made in the form of presentation at the end of the mission by one of us (Gary Ma) at the new National Hospital of Endocrinology.

Recommendations:

1. Establishment of a National Committee overseeing the IDD control and elimination programme comprised of relevant stakeholders eg. Government agencies including MOH, Ministry of Finance & Planning, MARD, Viet Nam Food Administration, Food Safety Committee of Ethnic Minority, Salt Industries, Universities, Hospitals, Community Health Workers etc. This National Committee will be able to set the direction for IDD prevention and control programmes in Viet Nam and oversee implementation of these programmes. Adequate funding from the Central Government must be provided for it to function efficiently and effectively.

2. We recommend IDD elimination, and sustainability of such efforts, must be given a high priority on the national health and development agenda and placed on the national work plan as a matter of urgency to prevent intellectual impairment of a whole generation of Vietnamese children.
3. With respect to Salt Production and Iodisation, we recommend:
 - i. All edible salt for human and animal consumption must be iodised. It is imperative that Decree 163 be repealed and replaced by new legislation underpinning Universal Salt Iodisation.
 - ii. Reform of the Salt Industry by the establishment of a 'Co-operative' Salt Organisation inviting all Salt Producers to be involved.
 - iii. The Viet Nam Food Administration (VFA) be involved and take responsibility for the production of safe and high quality edible iodised salt for human and animal consumption.
 - iv. The development of guidelines and manuals for the production of iodised salt and the provision of training and continuing technical support to the producers.
 - v. The implementation of a robust, but practical, quality assurance system to ensure that all salt is adequately iodised at the production level. This will entail the complementary activities of implementation of internal quality control with keeping appropriate written records at the factory level, and external verification of the quality of the iodised salt in government appointed facilities.
4. With respect to purchase of KIO_3 , we recommend: this activity should be coordinated from one source (industry based) and the distribution of the chemical to members provided at the same price to all, regardless of the size of the factory.
5. With respect to pricing of iodised salt, we recommend future pricing of iodised salt to be the same in all areas of Viet Nam with removal of subsidies, as the price differential of iodised and non-iodised salt is minimal and most of the salt producers are in agreement. In the interim, it is essential to continue providing subsidised iodised salt, 'in-kind' (as opposed to providing cash to households) in areas where subsidies are considered necessary until an appropriate mechanism(s) is worked out to phase out subsidies. This includes giving incentives to companies such as tax reductions/ exemptions on purchase of equipment, stocks and supplies.

6. With respect to Monitoring, Surveillance and Quality Assurance, we provide the recommendations as follows:
 - a) Strategic Plan:
 - i. Strengthening the capacity of the National Institute of Nutrition and National Hospital of Endocrinology to enhance the effectiveness of coordination and management of all IDD surveillance data to assist the National IDD Control Committee in decision making.
 - ii. Consideration should be given to the Provincial IDD Team to monitor retail IS outlets (by using Rapid Test Kit) to 'weed out' any non iodised salt in the market after obtaining approval from appropriate authority.
 - iii. Assistance to salt producers to produce iodised salt that meets the VFA standard and specifications and the Iodised Salt Seal should be tied to quality standards.
 - b) Operational Plan:
 - i. After the National Laboratory Network and iodised salt production facilities are fully operational, Viet Nam should maintain a national follow-up survey (based on previously established database) on IDD once every five years to evaluate the success of the IDD elimination and prevention programme. Household based survey model could be used while school based survey model could also be conducted if funding is available to assess the goitre rate among school children.
 - ii. Under Nutrition Surveillance System for annual data collection, it would be advantageous to include data such as a) whether household is using iodised salt for cooking; b) do they hear about iodised salt; c) testing household salts to identify any iodine content in salt etc. These annual data will assist NIN and HoE to fine tune the national IDD elimination and prevention programme.
 - iii. Median UIE (100mcg/L) for primary school children aged between 8 to 10 years old and reproductive age females (preferable pregnant women); Goitre Rate (<5%) by ultrasound (not palpation) and >90% IS Household Coverage are the essential criteria to be used.
 - iv. ICCIDD will return to Viet Nam to provide further advice on sample size and frequency of survey after the establishment of the national baseline database.
7. With respect to the National Laboratory at the National Hospital of Endocrinology in Hanoi, we recommend that it provides training and oversees all laboratories carrying out IDD functions (at Regional and Provincial levels), including laboratories in the salt iodisation facilities. Immediate next steps are highlighted in the report.

8. Public Communication

The review team was unable to adequately assess the public communication programme currently being implemented.

- i. We recommend setting up a public communication/social marketing sub-committee under the re-established National IDD Control Committee, and to conduct a situation analysis of the current public communication programme on IDD prevention as a priority.
- ii. We recommend that public communication efforts should focus on the benefit of using iodized salt to prevent brain damage in the unborn and improving growth and school performance in young children.
- iii. The inclusion of relevant household iodised salt consumption questionnaires in a survey that will provide valuable information for targeting public communication through the most effective channel.

Statement of Work and Terms of Reference

Goal: capacity assessment of the laboratory network and designing of a functional monitoring system for the IDD prevention and control program in Viet Nam

Objectives:

- To review the current status of the IDD prevention and control program in Viet Nam and to recommend new strategies and to convert current activities into an effective and sustainable public health program
- To ensure the analyses of urinary iodine and salt iodine content, performed throughout the IDD laboratory network at both National and Provincial levels in Viet Nam, are both reliable and consistent
- To review the laboratory capacity of Vietnamese salt manufacturers and establish a robust and long-term sustainable IDD monitoring system for Viet Nam

Intended Outcomes:

1. A new strategic direction and recommendations for the implementation of a sustainable IDD prevention and control programme in Viet Nam, underpinned by new legislation for Universal Salt Iodisation (USI).
2. Provision of recommendations and guidelines to ensure the IDD laboratory network in Viet Nam is capable of performing reliable measurements of urinary iodine and salt iodine concentrations.
3. Provision of recommendations and guidelines for salt manufacturers to have appropriate laboratory resources and skills to produce quality edible iodised salt for human consumption that is consistent with its stated standard recommended by the NIDDCC and the cost of iodine to be incorporated into the price of retail salt. It is anticipated that the salt manufacturers are fully aware of the government's intention for the future cost of potassium iodate (KIO_3) to be incorporated into the price of retail salt
4. Provision of recommendations and guidelines to ensure a long-term sustainable IDD monitoring system for the IDD prevention and control programme in Viet Nam

Team Members:

- Prof Creswell J Eastman: Clinical Prof of Medicine Sydney Medical School and immediate past ICCIDD Vice Chairman and Regional Coordinator Asia Pacific region
- A/Prof Gary Ma: School of Medicine, University of Western Sydney and current Acting ICCIDD Regional Coordinator Asia Pacific Region
- A/Prof Mu Li: School of Public Health University of Sydney and Board Member ICCIDD

I. Background and historical issues

Viet Nam first implemented a goitre control program in the 1970s, centred mainly on the mountainous provinces of the North, to address a goitre prevalence rate approximating 50% in some regions. A nationwide survey in 1993 revealed that goitre prevalence in children was 22% and median urinary iodine level only 32 µg/L, consistent with moderate to severe iodine deficiency. The government of Viet Nam responded to this high prevalence of goitre by issuing a Decision 481 that all people throughout the country should purchase and use only iodised salt. A nationwide network of salt iodisation plants was established to improve iodine nutrition. In 1999 Decision 481 was replaced by a Decree issued on "The Production and Supply of Iodised Salt for Human Consumption", known as Decree 19.

Control of IDD was elevated to a National Target Program and a National IDD Control Committee (NIDDCC) was formed within the Ministry of Health and given responsibility for managing this program and most of the resources were concentrated within the National Hospital of Endocrinology (HOE) where the laboratory monitoring system for iodised salt and urinary iodine had been established earlier on. By 2004 the international targets for control of IDD had been attained when the national coverage of iodised salt exceeded 90% of households (target >90%), median urinary iodine levels in schoolchildren approximated 140 µg/l (target 100ug/l) and goiter rates in schoolchildren had declined to the target of less than 5%. So Viet Nam along with the People's Republic of China were then cited as leading examples of what could be done in overcoming IDD, as these were the countries

with the highest household coverage of iodised salt throughout the Asia-Pacific region. However, in an Inter-Agency review conducted by UNICEF-ICCIDD-WHO in 2004 concerns were raised about the sustainability, as a significant proportion, as much as 50% of salt for human consumption was not being iodised and the processes and procedures for purchase and allocation of fully subsidised potassium iodate (KIO_3) appeared too complicated and were not readily transparent. In addition the IDD Elimination Program emphasised control and elimination of endemic goitre, rather than prevention of brain damage in the foetus and newborn. Even though Decree 19 stipulated that all edible salt and salt used in food preparation must be iodised this was clearly not happening and food processing mostly used non-iodised salt. This also appeared to be the case for the production of most forms of fish sauce and salty condiments which are the major sources of sodium in the diet for many parts of Viet Nam, particularly in the south of the country. This Inter-Agency review strongly recommended the revision of iodised salt legislation, streamlining of the current monitoring program, refocusing away from goiter control to emphasise Universal Salt Iodisation (USI) for optimal iodine nutrition and prevention of intellectual damage in children.

In 2005 the new Decree 163

For reasons that are not clear when the IDD elimination programme had reached its goals for household iodised salt coverage, median urinary iodine excretion values and goitre rates, the government of Viet Nam made the decision to devolve responsibility to the Provinces, such that IDD control programmes would simply become part of routine public health activities at Provincial level. The Hospital of Endocrinology in Hanoi continued to take responsibility for national monitoring activities and the procurement and allocation of KIO_3 . Budgets were cut substantially with the expectation that individual Provinces would fund all relevant activities.

In response to several different reports and concern within UNICEF, ICCIDD and WHO that iodine deficiency had re-emerged in Viet Nam an Inter-Agency joint mission was conducted in May 2012. This Inter-Agency mission confirmed that iodine deficiency had re-emerged in Viet Nam and was again a serious public health problem. The mission made several important recommendations:

- Revision of Decree 163 requiring mandatory iodisation of all edible salt for human consumption and food processing including salt-based seasonings
- The re-establishment of the National IDD Control Committee (NIDDCC) including health and other relevant sectors/stakeholders with clearly defined goals, targets and timeframes
- The re-establishment of the national monitoring laboratory at the HOE in Hanoi to oversee all laboratories carrying out IDD monitoring functions
- Cessation of the current arrangement where the HOE purchases KIO_3 and allocates quantities to salt producers and replacement with a new system where salt producers purchase their own KIO_3 and costs are incorporated into the price of iodised salt
- Upgrading information education and communication (IEC) activities which had been largely focused on goitre control rather than prevention of brain damage and loss of intellectual capacity from IDD
- Mobilisation of sufficient resources to support the revitalisation of the National IDD control and prevention programme
- Linking the IDD program with sodium reduction strategies

Salt Iodisation and Monitoring Systems – A Historic Event.

In Viet Nam, salt iodisation is undertaken by facilities controlled by the National Salt Corporation (NSC) or provincial authorities or privately. All salt factories wanting to iodise salt must apply to the National Iodine Deficiency Disorders Control Committee (NIDDCC) and the application must be supported with a business plan in each application. When approved, the successful candidates must travel to Hanoi to collect KIO_3 and the facility is registered. KIO_3 is provided free of charge to all registered producers.

In 2006 there were 75 iodised salt producers registered under the NSC but the total number of salt producers was unclear. This is because the non-iodised salt producers were not required to register. Twenty six (or 34%) of these producers were state owned enterprises which were under the responsibility of NSC of the Ministry of Agriculture and Rural Development (MARD). The rest were a mixture of state-owned enterprises or facilities run by Provincial People's Committee.

Iodisation level is standardised within the range of 20 ± 5 ppm at production level with the aim of achieving at least 20ppm at retail and household level.

Household consumption of iodised salt by Province in Viet Nam reached a record level in 2005 as shown in Fig 1 and Table 1.

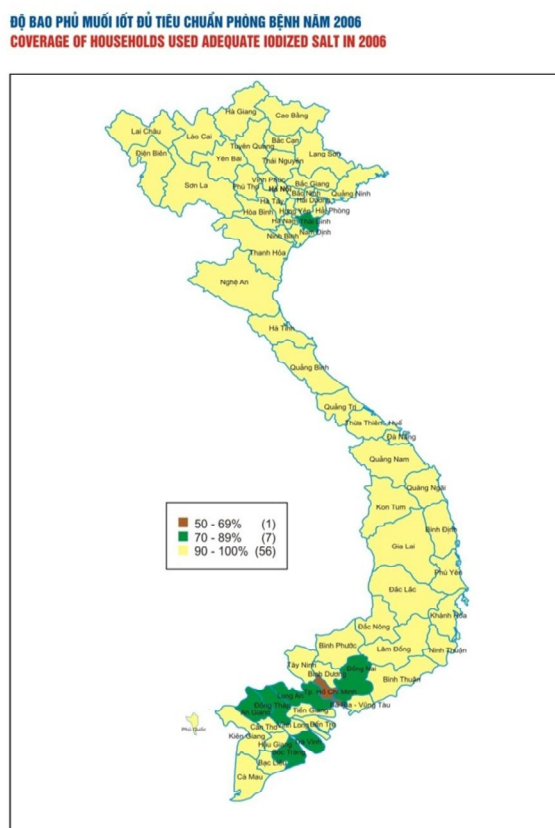


Fig 1: Coverage of households using iodised salt (Source: Report of the National IDD Survey 2005 – 2006, Hospital of Endocrinology, MOH, Viet Nam)

Since then data collected and analysed in 2011 indicated that household consumption of iodised salt has fallen dramatically from the peak of 92.3% in 2005 to 45.1% in 2011 at national level as shown in Table 1.

Year	1994	1995	1997	1998	2000	2003	2005	2008/9	2011
% Household Iodised Salt Consumption	24.9%	33%	61.2%	72.8%	77.6%	82.8%	92.3%	69.5%	45.1%

Salt production in Viet Nam was under the overall management of the Ministry of Agriculture and Research Department (MARD) while the production of iodised salt is supported and assisted by the Ministry of Health (MOH). It is therefore unfortunate that severe competition on trade existed between the two organisations and collaboration was limited. These two systems create enormous pressure to successfully promote the use of healthy iodised salt in future. There must be room for a radical review of current management of salt production in Vietnam in the near future.

Iodised salt coverage in mountainous regions, remote islands and ethnic minority areas is heavily subsidised by the Government of Viet Nam. Government law has stipulated that people living in those subsidized areas would be able to purchase the same iodized salt at the same price as those people living in a non-subsidized area. It is estimated that about 40% of the population enjoyed the benefit of the Government subsidy. Subsidies were allocated initially from MOH to Provincial level and eventually went on to iodisation facilities. After 2000, this '*chain of custody*' was relocated from MOH to the National Committee for Ethnic Minority (NCEM) and the original IDD budget was subsequently reduced.

Monitoring and Surveillance Systems:

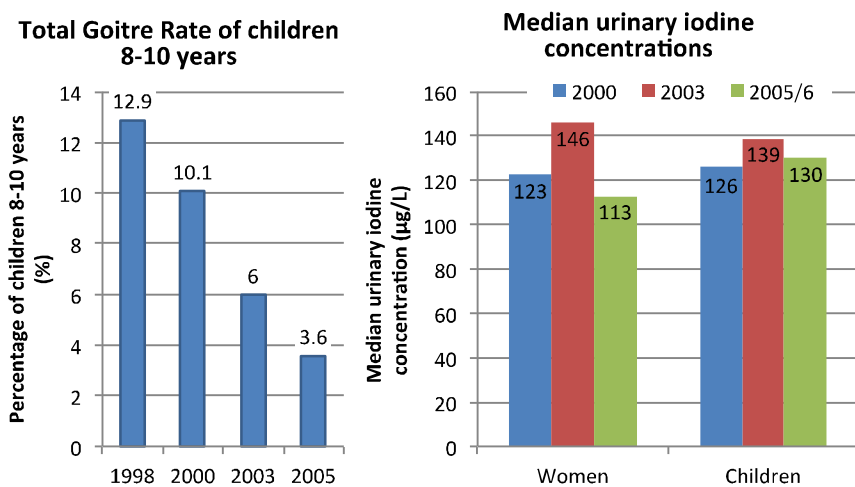
Up till 2005/06, Vietnam had a robust monitoring system for household iodized salt consumption. It consisted of a two data collection systems. In brief, at the Provincial level, each year in April, July and October, the local IDD team would conduct surveys on collection of household salt; Knowledge, Attitudes and Practices (KAP) and urine samples etc. Yearly results were reported by Province, at the National IDD meeting in November each year as well as data incorporated in the Annual Report of the NIDDCC Programme.

There was a national survey conducted at household and school levels once every three years. At household level, iodized salt was collected from households and a urine sample collected from women with children under 5 years of age. At the school level, a urine sample was collected from children between the ages of 8 and 10 years for urinary iodine estimation.

There is no doubt that this collection system of two lots of data generated an enormous amount of powerful data for the NIDDCC to fine tune its IDD programme in Viet Nam. Indeed, it did as Figure 2 demonstrated the IDD monitoring system was working well

in that environment provided a sufficient budget was allocated and adequate IDD promotional activities were pursued throughout various layers of the society. The two important biological indicators (a) Goitre rate had plummeted from 12.9% observed in 1998 to 3.6% in 2005 where the ICCIDD/WHO/UNICEF criteria is stated as a target of <5%; (b) Median Urinary Iodine concentrations for both vulnerable groups (1) reproductive age females and (2) primary school age children were well over the target 100 mcg/L.

**Figure 2: NIDDC Programme Achievements 1993-2005:
Health impact**



Ref: Report on Iodine Deficiency Disorder Preventative Activities in Viet Nam, HoE July 2012. NB. Optimal urinary iodine concentration for reproductive age women and children is shown in the grey area of the second graph.

Median Urinary Iodine by Regions

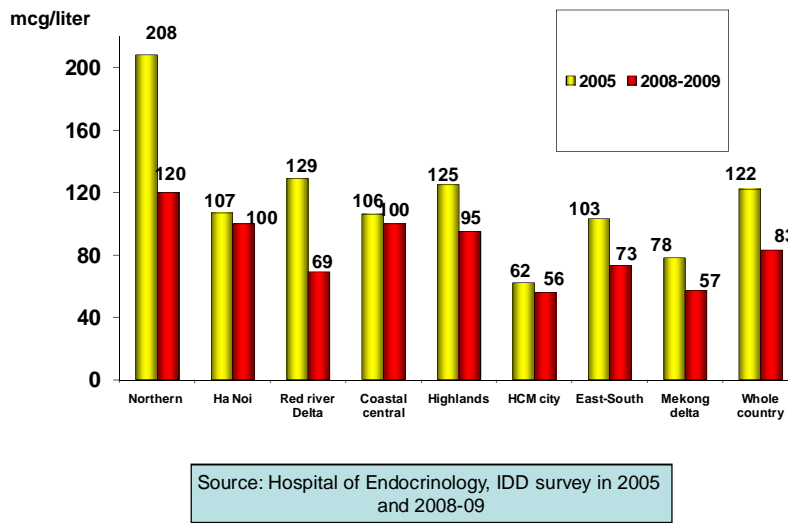


Figure 3: Median UIC in school children in different provinces in Viet Nam before 2005 and 2008/09 (Source: National IDD Survey Report 2005 – 2006, Hospital of Endocrinology, Viet Nam)

However, the latest data has painted a very gloomy picture in Viet Nam (as shown in Figure 3 and 4) confirming that IDD has returned to Viet Nam with median urinary iodine levels falling to below the ICCIDD/WHO/UNICEF recommended cut off of 100 mcg/L for most of the Provinces tested. More disturbing data, Figure 4, has come from a small sample size of pregnant women from four Provinces where the Median Urinary Iodine concentrations were less than the normal 150 mcg/L for pregnant woman as defined by the latest ICCIDD/WHO/UNICEF criteria.

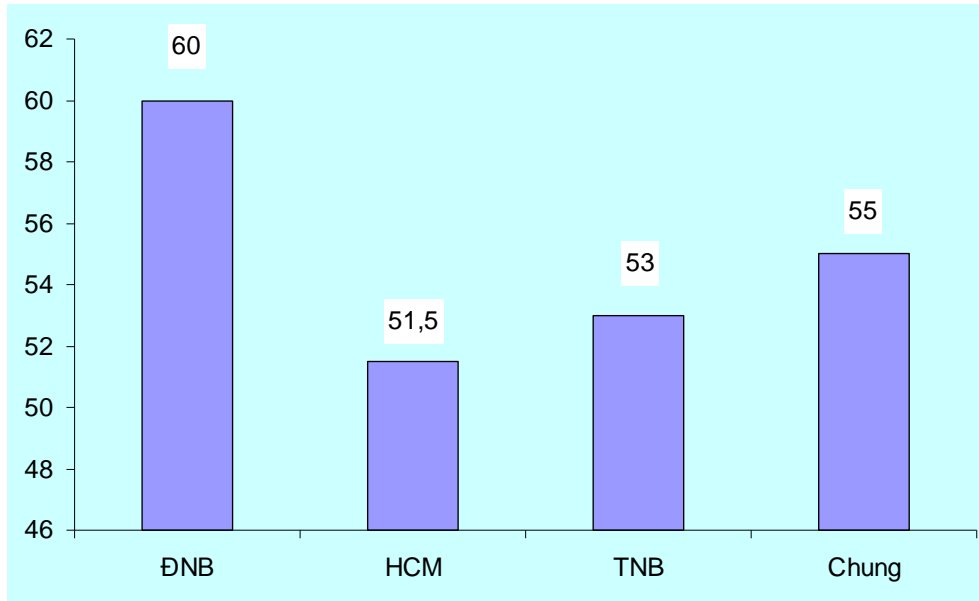


Figure 4: Median Urinary Iodine Concentrations among pregnant women in various provinces, Viet Nam. X-axis indicates name of Province and Y-axis indicates Median UIC. (Source: Survey Report on IDD Status in the Southern Provinces of Viet Nam, Hospital of Endocrinology, MOH, Viet Nam 2008)

The National IDD Laboratory Network:

The National IDD Laboratory Network in Viet Nam was established in the early 2000s. Recently its network has been restructured from seven provincial laboratories to four. It consisted of the National Hospital of Endocrinology (the National Laboratory) and four 'Regional' Laboratories, namely Thai Nguyen, Hoa Binh, Ho Chi Minh City and Can Tho. These laboratories performed both urinary and salt iodine analyses. In addition, they were also responsible for external monitoring of salt iodine Quality Control Checks for 75 salt factory laboratories throughout the country.

In 2003, eight technical staff including two persons from the National Laboratory and six technical people from Regional Laboratories were trained at the Chinese National Reference Laboratory in Beijing, Peoples Republic of China. This was a comprehensive laboratory training workshop that covered the period from 6th to 27th August 2003 and was funded by UNICEF. It is understood that the workshop was conducted primarily on Development of a Quality Control System and a Laboratory Management System.

II. Findings of the current review

1 Policy and programme

No significant changes have been implemented since the Inter-Agency review and report of May 2012. IDD elimination efforts and funding remain low priorities within the Ministry of Health (MOH) but there have been approaches made to the MOH by the HOE for increased funding as the price of KIO_3 continues its dramatic rise in the international markets. The current supply of iodised salt available to the population, based on limited availability of KIO_3 , is approximately one quarter of what is needed (see below). The HOE is fully aware of the seriousness of the situation and the potential high incidence of adverse neuro-developmental disorders that may eventuate due to the current level of iodine deficiency in the population. There is no criticism of their efforts and contributions. The future may not be as bleak as portrayed as in a meeting the Review team and UNICEF had with the Vice Minister of Health - attended by representatives from MOH, HOE, Department of Finance and Planning, Salt producers, and other stakeholders – there was no disagreement when the problem was portrayed as critical and in need of immediate corrective action. The Vice Minister stated that she now understood that iodine deficiency had re-emerged in Viet Nam and that corrective action was necessary.

Staff responsible for IDD monitoring in Can Tho and Ho Chi Minh City repeated the message that since responsibility for resourcing and implementing IDD elimination activities had been devolved to Provincial health authorities, IDD had become a low priority public health issue, possibly because of the lack of understanding of the sinister neuro-developmental disorders caused by IDD and the unfortunate portrayal of it as “control and/or eradication of endemic goitre”. Consequently monitoring data continues to be collected (See Monitoring section) but no corrective actions are being taken. Staff are frustrated in difficult circumstances struggling to maintain morale and commitment in the face of lack of resources. It is quite clear that urgent corrective action is needed, including raising the issue at higher levels and getting it back on the national agenda and reconvening a National Coordinating Committee to oversee change

and to develop and implement new USI legislation, while an appropriate level of funding is secured to ensure success and sustainability.

2 Production of Quality Iodised Salt

All approved salt factories with iodisation facilities, including private enterprises, have an internal iodine titration laboratory and undertake regular checks at production level using the Rapid Test Kit to assess whether salt contains iodine or not during production. Samples of such are quantified by a standard titration method for confirmation at the end of each day. This is called Internal Monitoring System for quality. From the historic records shown to us, it would appear that quality was good and consistent. One deficiency in this process is the lack of an External Quality Assurance Program to demonstrate the performance of its precision and accuracy on analytical method when compared to peers.

An External Quality Control System existed. Each month a member of the Provincial IDD laboratory staff visited the salt factory and took two samples from the production lot for titration at the Provincial salt laboratory. Feedback was apparently quick if a problem was identified. However, these external checks appeared to be for the purpose of making 'additional' checks on iodisation levels rather than verifying that internal titration tests were getting the right results.

There is an overall lack of Quality Control processes of analytical procedures or any records of Quality Control performance of the laboratory. Also there is an absence of a Quality Assurance Programme for the entire laboratory network to demonstrate the performance of the laboratories in analytical accuracy and precision.

3 What role can Viet Nam Food Administration (VFA) play?

The VFA is a Government agency under the Ministry of Health responsible for managing food hygiene, safety and quality. There is currently very little collaboration and participation in IDD activities. VFA has a number of food testing laboratories in Viet Nam as well as the appropriate technical regulations including safe operating procedures (SOP) for food safety and quality under its present Health Preventive System. It is not clear why the VFA does not provide a facility to monitor the quality of

iodised salt produced at the production level or at the retail outlets while iodised salt is classified as a food item in Viet Nam.

It makes good sense that overseeing the quality of iodised salt production by the VFA is a positive and plausible suggestion. Sharing resources in this way will enhance the long term sustainability of the IDD programme.

4 The National Laboratory Network

In our visit to the National Laboratory at the HOE, and the 'Regional' Laboratories (Thai Nguyen, Ho Chi Minh City and Can Tho), it was very clear that the work ethic and technical competence of their staff are excellent. Their understanding of the assay principles and detailed analytical knowledge are very good. However there was no evidence of any record keeping for staff training, equipment maintenance, chemical and consumable inventory; and QC acceptance and rejection rules are not in place. There is no document control system for all laboratory assay procedures. These activities are deemed as essential requirements for running a modern laboratory.

It is disappointing to hear from laboratory staff that the knowledge they learnt from training in China was not being applied appropriately. The reason for this has been attributed to the reduced IDD budget and replacement staff have not been recruited as the National IDD Programme is no longer a national priority. These were the common responses we received from staff.

5 Current laboratory structure and role

The current structure of the IDD Laboratory Network is adequate for its function; however there is little delineation of its role with the Regional Laboratories. There are overlapping and duplicating efforts. The primary function of the National Laboratory at the HOE is the centre of IDD policy making under MOH together with its interactive capacity with other government agencies. Most importantly the National Laboratory has to ensure their staff are fully equipped and competent in analytical skills. At this point in time, the heavy backlog of iodised salt samples accumulating in the office and laboratory indicates that the system is not working the way it should.

It is time for the National Laboratory to invest in an External National Quality Assurance Programme for salt and urinary iodine measurement for the entire network to free up resources to concentrate on administrative and operational issues. Equally important is the implementation of an internal assay Quality Control system in each iodine laboratory to ensure its analytical performance is accurate and satisfactory.

When the two QAP and QC systems are in full operation, the performance of each laboratory, including salt factory iodine laboratories, can be easily monitored. A poor performing laboratory, in terms of accuracy and precision, can be traced back and problems identified. Resources should then be allocated to improve performance.

There will be less frequency of samples coming from Regional Laboratories for cross testing. This will give more flexibility to the National Laboratory to develop a national training curriculum for its staff.

The four Regional Laboratories will have a similar fate that instead of monthly visits to iodisation facilities to collect salt samples, the frequency of sampling can be markedly reduced to a quarterly activity once the External National QAP and Internal Quality Control are implemented. It has been reported by some provinces that their staff are participating in other testings (eg food testing as seen in HCM City Nutrition Centre) or research projects with Hospital/ Universities (Preventive Medical Centre of Thai Nguyen Province) to compensate for 'down time' when less iodine work is available for testing.

Regional Laboratories will also provide staff training for other provincial staff within its boundary in salt titration and the effective use of the Rapid Test Kit for iodised salt testing. A '*train a trainer*' programme conducted by the National Laboratory for its Regional Laboratory staff would be a good investment for its future.

In regard to each individual iodisation facility, a combination of the daily use of Rapid Test Kit and titration method during the process of salt iodisation is mandatory.

6 Procurement of Potassium Iodate (KIO₃)

We visited a number of salt factories during the mission and staff we met all expressed their support for iodised salt production and the realisation of health benefits to the community. However they are concerned that supply of KIO₃ is limited and they are not allowed to purchase this chemical directly from overseas or from external sources because the current law prohibits it.

Another observation indicated was an overall dissatisfaction with the allocation of KIO₃ by the MOH and the follow up of whether KIO₃ was properly used in the industry. There have been incidents of industrial conflict about allocation of KIO₃. In a recent visit to Thanh Hoa Province we were informed that a dispute between VISACO salt factory and the General Salt Corporation on lending KIO₃ has no resolution in sight yet.

7 Iodised salt subsidies

Salt factory owners and managers we interviewed during the mission were all eager to purchase KIO₃ from the free market with their own source of funds if there is a change of law. Therefore, production of iodised salt would likely be increased immediately. The price differential between iodised and non-iodised salt is small as indicated by all the salt factory owners or managers.

8 The IDD Surveillance System

As the country was enjoying the success of eliminating IDD and Viet Nam was declared free from IDD in 2005/06, the budget obtained from NIDDCC for IDD activities was consequently reduced. Monitoring surveys for household iodized salt usage and adequate iodine intake in school children were no longer actively pursued at provincial and national levels. There was no consolidated process to integrate these important national survey programmes into other well established organisations within Viet Nam to share costs and resources. In the context of budget constraints and reduction, IDD surveillance was guaranteed to fail.

The inadequate budget for purchasing KIO₃ was one reason for failure. Other reasons given were all related to budget reduction and shortages of laboratory staff.

9 The National Institute of Nutrition (NIN) in IDD activities:

The NIN in Hanoi under MOH is the leading institution responsible for research, training and implementation activities in the field of nutrition, food sciences and clinical nutrition for Viet Nam. It has a broad experience of conducting food and nutrition surveillance, nutritional epidemiology studies and other nutrition related health problems. NIN is one of the government agencies in Viet Nam implementing the National Nutrition Strategy 2011-2010 with a vision toward 2030.

During our visit to the NIN, we were impressed that NIN has already taken the lead by designing and incorporating three iodised salt related questionnaires into their next year's national nutrition surveillance survey. Sample collection and interview survey frame work developed by NIN can be shared by National HOE as the majority of the survey information is collected from the same population living within the same community.

Further collaboration with NIN is warranted. This includes the possibility of keeping a portion of the survey salt sample to quantify the actual amount of iodine in salt. This will free up more resources for National HOE to concentrate on other non communicable diseases programmes.

III. Recommendations:

- 1 Establishment of a National Committee overseeing IDD control and elimination comprised of relevant stakeholders eg. Government agencies including MOH, Ministry of Finance & Planning, MARD, Viet Nam Food Administration, Food Safety, Committee of Ethnic Minority, Salt Industries, Universities, Hospitals, Community Health Workers etc. This National Committee will be able to set the direction for IDD prevention and control programmes in Viet Nam and oversee implementation of these programmes. Adequate funding from the Central Government must be provided for it to function efficiently and effectively.
- 2 We recommend IDD elimination, and sustainability of such efforts, must be given a high priority on the national health and development agenda and placed on the national work plan as a matter of urgency to prevent intellectual impairment of a whole generation of Vietnamese children.

- 3 With respect to Salt Production and Iodisation, we recommend:
 - i. All edible salt for human and animal consumption must be iodised. It is imperative that Decree 163 be repealed and replaced by new legislation underpinning Universal Salt Iodisation.
 - ii. Reform of the Salt Industry by the establishment of a 'Co-operative' Salt Organisation inviting all Salt Producers to be involved.
 - iii. The Viet Nam Food Administration (VFA) should be involved and take responsibility for the production of safe and high quality edible iodised salt for human and animal consumption.
 - iv. The development of guidelines and manuals for the production of iodised salt and the provision of training and continuing technical support to the producers.
 - v. The implementation of a robust, but practical, quality assurance system to ensure that all salt is adequately iodised at the production level. This will entail the complementary activities of implementation of internal quality control with keeping appropriate written records at the factory level, and external verification of the quality of the iodised salt in government appointed facilities.

- 4 With respect to purchase of KIO_3 , we recommend this activity should be coordinated from one source (industry based) and the chemical distributed to members at the same price to all, regardless of the size of the factory.

- 5 With respect to pricing of iodised salt, we recommend future pricing of iodised salt to be the same in all areas of Viet Nam with removal of subsidies. The price differential between iodised and non-iodised salt is minimal and this has been confirmed by all salt producers. In the interim, it is essential to continue providing subsidised iodised salt, 'in-kind' (as opposed to providing cash to households) in areas where subsidies are considered necessary until an appropriate mechanism has been developed to phase out subsidies. This includes giving incentives to companies such as tax reductions/ exemptions on purchase of equipment, stocks and supplies.

- 6 With respect to Monitoring, Surveillance and Quality Assurance, we provide the recommendations as follows:
 - a) Strategic Plan:
 - i. Strengthening the capacity of the National Institute of Nutrition and National Hospital of Endocrinology to enhance the effectiveness of coordination and management of all IDD surveillance data to assist the National IDD Control Committee in decision making.

- ii. Consideration should be given to the Provincial IDD Team to monitor retail IS outlets (by using Rapid Test Kit) to 'weed out' any non iodised salt in the market after obtaining approval from appropriate authority.
 - iii. Assistance to salt producers to produce iodised salt that meets the VFA standard and specifications and the Iodised Salt Seal should be tied to quality standards.
- b) Operational Plan:
- i. After the National Laboratory Network and iodised salt production facilities are fully operational, Viet Nam should maintain a national follow-up survey (based on previously established database) on IDD once every five years to evaluate the success of the IDD elimination and prevention programme. Household based survey model could be used while school based survey model could also be conducted if funding is available to assess the goitre rate among school children.
 - ii. Under Nutrition Surveillance System for annual data collection, it would be advantageous to include data such as a) whether household is using iodised salt for cooking; b) do they hear about iodised salt; c) testing household salt to identify any iodine content in salt etc. These annual data will assist NIN and HoE to fine tune the national IDD programme.
 - iii. Median UIE (100mcg/L) for primary school children aged between 8 to 10 years old and reproductive age females (preferable pregnant women); Goitre Rate (<5%) by ultrasound (not palpation) and >90% IS Household Coverage are the essential criteria to be used.
 - iv. ICCIDD will return to Viet Nam to provide further advice on sample size and frequency of survey after the establishment of the national baseline database.

7 With respect to the National Laboratory, we recommend:

- i. The National Laboratory must develop a laboratory skill curriculum for staff training in both provincial and salt laboratories. This must include Quality Control procedure to manage assay precision and accuracy.
- ii. The National Laboratory provides Quality Control materials for inclusion in all iodine assays.
- iii. The National Laboratory develops a robust but functional urine and salt iodine Quality Assurance Programme for all Provincial laboratories including salt producer iodine laboratories.
- iv. In the interim, consider participation in the EQUIP (Urine Iodine) quality assurance programme which is provided free of charge by the Centre for Diseases Control, Atlanta, Georgia, USA.
- v. The National Laboratory should standardise all assay protocols with annual review update history.

- vi. The National Laboratory develops a document control system that manages all documents in use in the Laboratory Network including result reporting log sheets; equipment maintenance records; staff training records and their statements of duties; chemicals and consumables log sheets
- vii. The National Laboratory must provide leadership by developing in house IDD related educational programmes ensuring staff self-development eg. Journal club and attending relevant seminars provided by internal and external bodies such as University research group or inter-Department research group within their own Institutes.

8 Public communication

The review team was unable to assess the public communication program currently being implemented.

- i. We recommend setting up a public communication/social marketing sub-committee under the re-established national IDD Control Committee, and for it to conduct as a priority a situation analysis of the current public communication programme on IDD prevention.
- ii. We recommend that public communication efforts should focus on the benefits of using iodized salt to prevent brain damage in the unborn and improving growth and school performance in young children.
- iii. The inclusion of relevant household iodised salt consumption questionnaires in a survey that will provide valuable information for targeting public communication through the most effective channels.

Acknowledgements

The ICCIDD Review team would like to thank Dr Nguyen Vinh Quang, Vice Director of the National Hospital of Endocrinology (HOE) Hanoi, Dr Le Phong, Vice Chief of Training Centre (HOE) Hanoi and his team for their availability and generous time as well as the government officials, from central and provincial, and salt industry representatives who made this visit very informative and pleasant.

Our appreciation also goes to UNICEF Country Office, in particular, Mr Roger Mathisen, Nutrition Specialist, Dr Nguyen Dinh Quang, Nutrition Officer for all technical discussion for clarification necessary during the ICCIDD Mission. Ms Nguyen Thi Trang, CSD Section, for organising effective local transportation, hotel accommodations and hospitality to various provincial cities in Viet Nam.

Annex 1: Itinerary for ICCIDD Mission in Vietnam (25th to 28th February 2013)

Date, Time	Activities	Responsible Person
24 th Feb Evening	Arrived in Hanoi	Gary Ma - Check in Hotel
25 th Feb 9:00 – 9:30 Morning 10:00 – 12:00 14:00 – 17:00	Meeting with UNICEF Officers Meeting with the Hospital of Endocrinology (HoE) on discussion of current IDD situation and overall assessment work Working with the IDD Team on current status of monitoring system and planning site visit to Thai Nguyen Province	UNICEF Office Hospital of Endocrinology Hospital of Endocrinology
26 th Feb 06:30 – 08:00 08:00 – 12:00 14:00 – 16:00 16:00 – 18:00	Travel to Thai Nguyen Province by car Meeting with Preventive Medical Centre of Thai Nguyen Provincial Officials Working with Thai Nguyen IDD Team. Assessment Salt Lab and Urine Lab Work with an Iodised Salt Factory. Salt Lab Trave back to Hanoi by car	Responsible person from ICCIDD, UNICEF, MOH, HoE, Preventive Medical Centre of Thai Nguyen Province officials
27 th Feb 09:00 – 16:00	Work with HoE IDD Team on assessment programmes Finalisation of Agenda for next May visit and logistics	UNICEF, HoE IDD Team
28 th Feb	Leave Hanoi for Australia	ICCIDD Consultant

Annex 2: Itinerary for ICCIDD Mission in Vietnam (6th – 16th May 2013)

Date, Time	Activities	Responsible person
5 th May	Arrive in Hanoi	Prof CJ Eastman Dr G Ma
6 th May 09:00 – 10:00 10:00 – 11:00 11:30 – 12:30 13:30 – 17:30	Meeting with UNICEF Team Meeting with HoE IDD Team Travel to Noi Bai Airport Arrive at Can Tho Province and check in Ninh Kieu hotel	UNICEF Hospital of Endocrinology
7 th May 09:00 – 12:30 14:00 – 17:00	Work with Can Tho Provincial IDD Management Unit Visit Urine Lab Travel to HCM City by car Check in Grand Hotel	ICCIDD, UNICEF, HoE, VFA, MOH
8 th May 09:00 – 15:00 17:00 – 19:00 19:00 – 19:30 19:00 – 21:00	Work with HCM City IDD Management Team Visit Urine Lab and Salt Lab at the HCM Nutrition Centre Flight to Hanoi Check in Hotel, Hanoi Return to Hotel, Hanoi by Taxi	ICCIDD, UNICEF, HoE, VFA, MOH Dr Mu Li
9 th May 10:30 – 11:30 14:00 – 15:00	Meeting with National Institute of Nutrition on existing nutrition surveillance systems Meeting with UNICEF and HoE IDD Team in preparation of meeting with MOH senior officials	ICCIDD, UNICEF, HoE
10 th May 09:00 – 10:00	Meeting with MOH senior officials and Health Service	ICCIDD, UNICEF, HoE, MOH and related Government

14:00 – 15:00	Administration on IDD programme in Viet Nam Debriefing with UNICEF	Departments ICCIDD, UNICEF
11 th May 08:00 10:30	Depart to Airport Depart to Airport	Dr Mu Li Prof CJ Eastman
12 th May	Preparation of draft presentation	Dr G Ma
13 th May 07:00 – 11:00 11:00 – 13:00 14:00	Travel to Thanh Hoa Province Work with the Provincial IDD Management Unit Visit one salt factory Check in Hotel	ICCIDD, UNICEF, HoE, VFA, MOH
14 th May 07:30 – 12:00 Afternoon	Arrive in Hanoi Preparation of draft presentation	ICCIDD, UNICEF, HoE, VFA, MOH Dr G Ma
15 th May All Day	Preparation for report and presentation	Dr G Ma
16 th May 09:00 – 12:00	Presentation of Findings and Draft Recommendations	ICCIDD, UNICEF, VFA, MOH, HoE, General Salt Corporation and Government Departments

Annex 3 – List of people met during mission

Visit in February 2013

Day 1 (UNICEF, National Hospital of Endocrinology)

1. Mr Roger Mathisen, Nutrition Specialist, UNICEF, Viet Nam
2. Dr Nguyen Dinh Quang, Nutrition Officer, UNICEF, Viet Nam
3. Dr Le Phong, Vice Chief of Training Centre, National HoE, Hanoi
4. Dr Nguyen Viet, Vice Director, Diabetes Health, National HoE, Hanoi
5. Dr Nguyen Vinh Quang, Vice Director, National of Hospital of Endocrinology
6. Ms Dang Thi Mai Trang, IDD Team, National HoE, Hanoi
7. Dr Nguyen Tri Dung, IDD Labs Expert, National HoE, Hanoi
8. Mr Tran Huy Dung, Manager, General Salt Corporation, Ministry of Agricultural and Rural Development, Viet Nam
9. Mr Tovan Hoc, General Salt Corporation, Ministry of Agriculture and Rural Development, Viet Nam

Day 2 (Thai Nguyen Province)

1. Dr Nguyen Le Minh, Director, Preventive Medical Centre Of Thai Nguyen Province
2. Dr Le Phong, Vice Chief of Training Centre, National HoE, Hanoi
3. Dr Nguyen Dinh Quang, Nutrition Officer, UNICEF, Viet Nam
4. Ms Dang Thi Mai Trang, IDD Team, National HoE, Hanoi

Day 3 (UNICEF, National Hospital of Endocrinology)

1. Mr Roger Mathisen, Nutrition Specialist, UNICEF, Viet Nam
2. Mr Tran Huy Dung, Manager, General Salt Company
3. Dr Nguyen Dinh Quang, Nutrition Officer, UNICEF, Viet Nam

Visit in May 2013

Day 1 (UNICEF and National Hospital of Endocrinology)

1. Mr Roger Mathisen, Nutrition Specialist, UNICEF, Hanoi
2. Mr Jesper Moller, Deputy Representative, UNICEF, Viet Nam
3. Dr Nguyen Dinh Quang, Health and Nutrition Officer, UNICEF, Hanoi
4. Dr Nguyen Vinh Quang, Vice Director, National of Hospital of Endocrinology, Hanoi
5. Dr Le Phong, Vice Chief of Training Centre, National HoE, Hanoi
6. Dr Nguyen Viet, Vice Director, Diabetes Health, National HoE, Hanoi
7. Ms Dang Thi Mai Trang, National HoE, Hanoi
8. Dr Nguyen Tri Dung, IDD Labs Expert, National HoE, Hanoi
9. Mr Tran Huy Dung, Manager, General Salt Company, Viet Nam
10. Mr Do Huu Tuan, Vietnam Food Administration, Hanoi

11. Dr Nguyen Thi Ngoc Bao, Manager, Department of Finance & Planning, Hanoi
12. Mr Tran Huy Dung, Manager, General Salt Corporation, Ministry of Agriculture and Rural Development, Viet Nam
13. Mr Le Nguyen Thanh, Director, General Salt Corporation, Ministry of Agriculture and Rural Development, Viet Nam

Day 2 (Can Tho Preventive Medicine Centre)

1. Mr Do Huu Tuan, Vietnam Food Administration, Hanoi
2. Dr Nguyen Thi Ngoc Bao, Manager, Department of Finance & Planning, Hanoi
3. Dr Le Phong, Head of Training Centre, National HoE, Hanoi
4. Mr Roger Mathisen, Nutrition Specialist, UNICEF, Viet Nam

Day 3 (Ho Chi Minh City IDD Management Unit)

1. Dr Do Thi Ngoc Diep, Director, Nutrition Center, DoH, Ho Chi Minh City
2. Dr Tran Thi Minh Hanh, Deputy Director, Nutrition Center, DoH, Ho Chi Minh City
3. Mr Do Huu Tuan, Vietnam Food Administration, Hanoi
4. Dr Nguyen Thi Ngoc Bao, Manager, Department of Finance & Planning, Hanoi
5. Dr Le Phong, Vice Chief of Training Centre, National HoE, Hanoi
6. Mr Roger Mathisen, Nutrition Specialist, UNICEF, Viet Nam
7. Ms Vu Quynh Hoa, Laboratory, Nutrition Center, Ho Chi Minh City
8. Ms Nguyen Thi Viet Thu, Laboratory, Nutrition Center, Ho Chi Minh City
9. Ms Pham Ngoc Oanh, Laboratory, Nutrition Center, Ho Chi Minh City
10. Dr Phan Nguyen Thanh Binh, Specialist, Nutrition Center, Ho Chi Minh City
11. Mr Nguyen Van Vinh, Manager, Southeast Salt Production Company, Viet Nam
12. Ms Lara Vu, Private Sector Specialist, UNICEF, Ho Chi Minh City Office, Viet Nam

Day 4 (National Institute of Nutrition)

1. Prof Mu Li, ICCIDD, Australia
2. Dr Le Phong, Vice Chief of Training Centre, National HoE, Hanoi
3. Dr Nguyen Dinh Quang, Nutrition Officer, UNICEF, Hanoi
4. Nguyen Thi Lam, Director of nutrition surveillance
5. Dr Le Danh Tuyen, Vice Director, National Institute of Nutrition, Hanoi
6. Dr Tran Thanh Do, Vice Chief, National Surveillance, Hanoi
7. Dr Le Phong, Vice Chief of Training Centre, National HoE, Hanoi
8. Dr Nguyen Dinh Quang, Nutrition Officer, UNICEF, Viet Nam
9. Mr Do Huu Tuan, Vietnam Food Administration, Hanoi
10. Dr Nguyen Thi Ngoc Bao, Manager, Department of Finance & Planning, Hanoi

Day 5 (Ministry Of Health)

1. A/Prof Nguyen Thi Xuyen, Vice Minister, Ministry of Health, Viet Nam

2. Dr Nguyen Trong Khoa, Deputy Director, Viet Nam Administration for Medical Services, MOH, Viet Nam
3. Ms Nguyen Thi Bich Thuan, Vice Director, Finance & Planning Department, MOH, Viet Nam
4. Dr Le Phong, Vice Chief of Training Centre, National HoE, Hanoi
5. Dr Nguyen Dinh Quang, Nutrition Officer, UNICEF, Viet Nam
6. Mr Roger Mathisen, Nutrition Specialist, UNICEF, Viet Nam
7. Dr Craig Burgess, Chief Child Survival & Development, UNICEF, Viet Nam
8. Ms Do Hong Phuong, Nutrition Policy Specialist, UNICEF, Viet Nam
9. Ms Dang Thi Mai Trang, IDD Team, National HoE, Hanoi
10. Mr Do Huu Tuan, Food Administration, Hanoi
11. Dr Nguyen Thi Ngoc Bao, Manager, Department of Finance & Planning, Viet Nam

Day 6 & 7 (Gary Ma prepared draft report and presentation)

Day 8 (Thanh Hoa Province)

1. Dr Le Minh Su, Director of Thanh Hoa Hospital of Endocrinology, Thanh Hoa Province
2. Dr Vu Van Hung, Senior Expert of Finance and Planning, MOH, Hanoi
3. Dr Pham Van Hai, Vice Director, Thanh Hoa Hospital of Endocrinology, Thanh Hoa Province
4. Nguyen Tac Lu, Director, Visaco Salt Company, Thanh Hoa Province
5. Dang Thi Mai Trang, IDD Team, National Hospital of Endocrinology, Hanoi
6. Dr Le Phong, Vice Chief of Training Centre, National HoE, Hanoi
7. Dr Nguyen Dinh Quang, Nutrition Officer, UNICEF, Viet Nam
8. Mr Do Huu Tuan, Vietnam Food Administration, Hanoi
9. Dr Nguyen Thi Ngoc Bao, Manager, Department of Finance & Planning, Hanoi

Day 9 (Journey back to Hanoi)

Day 10 (Gary Ma prepared draft presentation)

Day 11 (National Hospital of Endocrinology – New Hospital site)

1. Dr Nguyen Thi Khanh Tram, Vice Director, Vietnam Food Administration, Hanoi
2. Mr Do Huu Tuan, Vietnam Food Administration, Hanoi
3. Dr Le Phong, Head of Training Centre, National HoE, Hanoi
4. Dr Nguyen Dinh Quang, Nutrition Officer, UNICEF, Hanoi
5. Mr Roger Mathisen, Nutrition Specialist, UNICEF, Hanoi
6. Dr Nguyen Viet, Vice Director, Diabetes Health, National HoE, Hanoi
7. Ms Dang Thi Mai Trang, National HoE, Hanoi
8. Dr Nguyen Tri Dung, IDD Labs Expert, National HoE, Hanoi
9. Dr Nguyen Vinh Quang, Vice Director, National of Hospital of Endocrinology, Hanoi

10. Dr Nguyen Lan, Chief of Nutrition, Surveillance Unit, National Institute of Nutrition, Hanoi
11. Mr Le Nguyen Thanh, Director, General Salt Company
12. Mr To Van Hoc, Vice Director, General Salt Company
13. Various Provincial IDD Representatives