A Survey of Salt Importers, Producers and Traders in the Philippines: an Evaluation of Internal and External Quality Assurance and Control

Nutrition Center of the Philippines
December 2010

TABLE OF CONTENTS

EXECUTIVE SUMMARY **i**

LIST OF TABLES **vi**

LIST OF FIGURES **vii**

INTRODUCTION…… **1**

Background…… 1

General objectives……. 3

METHODS…… **3**

Social preparation……... 3

Development and pre-testing of interview schedules and audit protocol…….. 3

Recruitment and training of Field Interviewers……. 4

Provincial survey of salt producers and importers/traders……. 4

Data processing and analysis…….……. 5

RESULTS…….. **6**

I. Salt Producers..……... 6

Respondents' profile ……... 6

Salt production process…… 10

Storage and packaging practices…… 13

Selling practices…….…… 14

Distribution of salt…….……. 16

Iodization of salt…….…… 17

II. Salt Importers/Traders…….…….. 18

Respondents' profile…….……. 18

Purchasing practices…….……. 20

Storage and packaging practices…….……... 23

Marketing and distribution…….…… 25

Iodization of salt…….…… 27

III. Quality Assurance/Quality Control…….…… 28

Respondents' profile…….. 28
Information on guidelines for salt iodization……. 30
Receipt of raw materials for salt iodization……... 32
Storage practices for raw materials used during salt iodization…….. 32
Salt iodization……. 34
Iodine level in iodized salt.……. 38
Salt iodization method..……. 41
Use of iodized salt…….. 42
Quality control……. 43
Packaging of iodized salt.……... 44
Sanitation and safety system……... 46
Storage, handling and distribution……. 48
Recordkeeping……. 49
IV. Needs Assessment…….. 50
IV. Mapping the location of Salt Importers/Traders and Producers using the Global Positioning System ……. 53

DISCUSSIONS AND RECOMMENDATIONS…….. 55

List of Annexes

EXECUTIVE SUMMARY

The 2010 Salt Survey was conducted among selected salt importers, traders and producers located in Metro Manila, Ilocos Norte, Ilocos Sur, La Union, Bulacan, Pangasinan, Occidental Mindoro, Batangas, Iloilo, Guimaras, Negros Occidental, Negros Oriental, Cebu, Misamis Oriental, Davao, General Santos City and Zamboanga. The objectives of the study are to validate the registry of salt importers, traders and producers and to evaluate the existing quality assurance and quality control systems and practices of the salt industry.

Salt producers

Of 384 producers approached, 375 agreed to be interviewed (2.3%). A total of 375 salt producers were interviewed, of whom, 70% were from Luzon with Pangasinan and Occidental Mindoro contributing the most number of respondents. About 27% of the salt producers interviewed were from Visayas while 2.7% were from Mindanao.

More than one-third (35%) of the salt producers interviewed have been operational for 10 years or less. Only 6% of the respondents were able to show documentation on business registration while only 1% showed their License to Operate from the Food and Drug Authority.

Most salt producers use solar evaporation to produce coarse salt. Salt producers from Ilocos Sur, Ilocos Norte, La Union and one-third of producers from Pangasinan use the cooking method to produce fine salt. More than half (56%) of the respondents have greater than 1 to less than or equal to 10 hectares of land area allotted for salt production. Salt producers from Luzon provinces used ceramics as salt beds. On the other hand, majority of the salt producers from Visayas and Mindanao use plastic sheets. Among the 346 respondents who reported their salt production in the previous year, 9.5% produced salt not exceeding 2 MT (subsistence producers), 72% produced salt ranging from more than 2 MT to 300 MT (small-scale producers), 17.3% produced salt ranging from more than 300 MT to 2,000 MT (medium-scale producers) and 1.2% produced salt exceeding 2,000 MT (large-scale producers). Ninety-one percent (91%) of the respondents produced salt for human/commercial, 75% produced salt for food processing, 27% produced salt for animal consumption while 7% produced salt for industrial use.

A fourth (25.3%) of the respondents did not have a warehouse to store harvested salt. Regardless of the presence of a warehouse, most producers store salt by directly dumping the harvested raw salt on the ground, either lined with canvas, plastic sheets, woven bamboo mats, used sack or rice hull or not lined at all. Almost all (99%) respondents sold salt in bulk, usually packed in second-hand sacks. Most packaging used when selling salt had no labeling or information on the company name, manufacturers' name and date of production

Refined salt was more expensive than coarse salt, selling as much as PhP 15.00 per kg.

The usual selling price of commercial salt was between PhP 1.00 to 3.00 per kg (55%). Among those who reported (83% of the 375) the quantity of salt sold in the previous year, 44.4% reported selling between 10 to less than 100 MT of salt the previous year.

When the respondents were asked if they iodize the salt they produce, only 15% answered positively. No respondents from Bulacan, Cebu, Misamis Oriental and Zamboanga iodize their salt. Most of those (60.4%) iodizing salt were small-scale salt producers, producing between 2 to less than or equal to 300 MT of non-iodized salt. Three out of the 4 large-scale salt producers are iodizing their non-iodized salt.

Salt importers/traders

A total of 39 (60%) of the 65 salt importers/traders who were approached to join the survey participated. Almost half (46%) of the respondents have been operational for not more than 10 years. However, only 33% were able to show the documents on business registration while only 13% were able to show their LTO from the FDA.

The respondents purchased either raw or non-iodized, iodized or both types of salt. A third of them (33%) purchased iodized salt only while 41% purchased non-iodized salt only. Non-iodized salt were usually purchased from local salt producers (72%) while imported non-iodized salt came from Australia, China and Thailand. Majority of the respondents (86%) purchased iodized salt from the large-scale local traders.

Only 85% reported the quantity of non-iodized purchased, 50% of whom purchased more than 300 MT last year. Out of the 21 importers/traders of iodized salt who gave information on the quantity of iodized salt purchased last year, half (52%) reported purchasing between 2 to less than or equal to 300 MT. Of the total salt purchased, 55% of the non-iodized salt and 87% of the iodized salt are allotted for human consumption.

Warehouses used for the storage of salt are available for 76% of the respondents. Most of the respondents (73.1%) store non-iodized salt in sacks while all iodized salt is packed in sacks. The sacks used were usually made from woven polypropylene that was either brand new or second-hand.

Majority of the respondents (73%) usually sold iodized salt in bulk packed in sacks. Iodized salt (46%) was also repacked into transparent polyethylene bag. Majority of the respondents (64%) who reported selling non-iodized salt do not have the information label on the packaging used on packed non-iodized salt.

Only 79% of the respondents who were selling non-iodized salt answered the question on the quantity of non-iodized salt sold the previous year. Among them, 47% reportedly sold more than 500 MT of non-iodized the previous year. More than half (62.5%) reported selling non-iodized salt not more than PhP5.00 per 1 kilogram while 48% sold iodized salt at much higher price, from more than PhP5.00 to as much as PhP20.00 per 1 kilogram.

Importers/Traders from Luzon sold their non-iodized salt to traders from Ilocos provinces,

Cagayan Valley, Isabela and Nueva Ecija; respondents from Visayas would sell their salt to buyers from Iloilo, Guimaras, Samar, Leyte and Negros Oriental; respondents from Mindanao would sell their salt to Cotabato, Surigao, Sultan Kudarat and Davao.

Among the traders/importers who reported purchasing and iodizing non-iodized salt, only 65% claimed to iodize the non-iodized salt they purchased. Among those who claimed to iodize their non-iodized salt, only 24% were able to show their LTO document.

Quality Assessment / Quality Control

Most of those (74%) interviewed using the Quality Control/Quality Assurance system were salt producers. Only 3% were able to show their operations manual.

Eighty-four percent (84%) reported familiarity with the salt iodization guidelines. Majority of the respondents (89%) cited the government as their source of information while 13% cited their own company as their source of information. The information known by the salt importers, traders and producers (SITPs) on iodization can be classified into rules and regulations, technical and beneficial knowledge.

With regards to raw materials used for salt iodization, visual check of non-iodized salt and potassium iodate is used. Most of the respondents (68%) have warehouses to store the raw materials. However, most SITP did not employ any system for storage of the raw materials. Instead, they go by the 'easy to reach/place' rule because a lot of them only fortify salt when they already have a buyer lined up.

The SITPs (92%) do not have all utilities required in the production area allotted for salt iodization and packaging. Most of the SITPs (63%) used plastic sprayer (pressurized garden sprayer or plastic hand spray bottle) in spraying the fortificant solution during salt iodization. Only ¼ of the SITPs had iodization machines, which may either be a continuous type blender (28%), ribbon blender (20%) or cement mixer (16%), while the rest had improvised machines. Iodized salt was mostly produced manually with almost all of the SITPs (96%) producing iodized salt for human or household consumption

The recommended iodization level in the Philippines is between 20 to 70 ppm iodine based on 2007 revised Implementing Rules and Regulations of the ASIN Law. Among the 31 who reported their target minimum iodine level, only 26% targeted a minimum iodine level that was within the standard while 82% reported a maximum iodine level above the standard, between 75 to 100 ppm. Only 75% provided answers on both the amount of fortificant and the quantity of salt iodized. Among those who gave the information, 37% used a solution that would yield iodine levels below the 2007 standard. However, based on the old standards (between 70 to 150 ppm at manufacturer's level), only 1 respondent was iodizing using a fortificant solution below standards.

To conduct quality control on their iodized salt, all of the respondents used a Rapid Test Kit (RTK) usually given by the Sanitary Inspectors of the local government unit. However, among those who were able to show the complete set of the RTK, 76% were

using RTKs past the expiration date indicated on the label of the box.

Iodized salt were usually packed in sacks and stored in a warehouse using a pallet. However, there are some who store iodized salt by dumping directly on the warehouse floor or packed in sack but not elevated from the floor. Further, almost all respondents (99%) do not comply with the required labeling requirement of packed iodized salt. Also, only 41% followed the first-in, first-out (FIFO) system.

To ensure safety and sanitation during salt iodization protective clothing/uniform for the workers should be available. However, only 5% of the respondents have complete available protective clothing for workers. In addition, only 15% reported to have first-aid kits available in the area in case of accidents or emergencies. Fumigation of the premises was not regularly conducted in the production area.

Eleven percent (11%) claimed to have a system being followed when complaints about their products are received. The usual complaints of customers were high moisture content of the iodized salt or improper sealing of the packages. The product is retrieved and replaced. However, 55% do not keep a record or any documentation related to the manufacturing of iodized salt. Those who claimed to have a system of record keeping (37%) would usually show either a notebook or a ledger to keep track of records such as results of machine maintenance, daily activities and others.

Needs assessment

The study also probed into the possible ways that assistance can be given to the salt manufacturers by asking an open-ended question: What assistance do you need to help improve your business?. Their response can be summarized as follows: financial support for additional capital to purchase equipment for salt production and iodization; additional training and equipment to improve product quality; government assistance in law implementation, price control and salt importation.

The survey showed that there has been a change in the profile of the salt industry in the country when compared with the results of our last nationwide survey in the 1990s. We estimate that at least 30% of the salt producers who were included in the 1990 surveys have closed. However, there were also young players who have cropped-up in the salt industry as shown by the survey where a third of the salt producers interviewed reported operating for less than or equal to 10 years. There was also a change in the materials used as salt beds, from using broken ceramics to using plastic sheets. In the production process of salt, dissolving coarse salt in seawater to produced concentrated brine to be cooked to produce fine grain salt has become more common.

Several issues related to the monitoring of quality assurance and quality control have also been observed. First, there is lack of updated or available registry of salt importers, traders and producers from the local government units, which can be used to support the monitoring efforts of concerned agencies. Also, salt iodization using salt iodization machine was generally limited to large-scale salt manufacturers. Medium to subsistence

manufacturers generally iodize manually with no standardized procedures or guidelines being followed.

All salt manufacturers use RTKs to determine if the salt is iodized. However, most of the RTKs being used when inspected were expired. It was also observed that most of the SITPs do not collect salt samples from the heap but instead drop the test solution directly on the top of the iodized salt heap, usually at one area only. Ideally one to two spoonfuls of salt samples should be collected from random areas (i.e. top, middle, bottom) of the heap, each salt samples should be placed in a test plate and separately tested for presence of iodine by dropping one to two drops of test solution onto the salt sample.

Packaging and labeling requirements of packed iodized salt based on the BFAD Administrative Order No. 88-B series of 1988 are rarely followed by the SITPs and if followed are limited to large-scale SITPs. Lastly, guidelines required that iodized salt should be kept palletized in a cool and dry storage area where it is protected from dust and other contaminants. However, several SITPs do not have suitable warehouse construction allotted for storing iodized salt.

It is evident that there were several changes in the profile of the salt industry in the country. Various issues on the salt industry and the salt iodization process have also been raised and discussed in this report. It is best to address several technical, administrative and logistical issues in order for the Universal Salt Iodization Program to continue an effective and efficient implementation.

LIST OF TABLES

No.	Title	
1	Provinces in Luzon, Visayas and Mindanao included in the survey…….	4
2	Frequency and percent distribution of salt producers by interview status per province…….	7
3	Frequency and percent distribution of salt producers by respondents' profile per island……	9
4	Frequency and percent distribution of salt producers by variables related to production of non-iodized salt per island……..	12
5	Frequency and percent distribution of salt producers by variables related to storage and packaging practices of non-iodized salt per island……	13
6	Frequency and percent distribution of salt producers by variables related to selling practices of non-iodized salt per island…….	15
7	Frequency and percent distribution of salt producers by practice of iodizing salt per area……	16
8	Frequency and percent distribution of salt importers/traders by interview status per area……	18
9	Frequency and percent distribution of salt importers/traders by respondents' profile per island……	19
10	Frequency and percent distribution of salt importers/traders by variables related to purchasing practices of salt per island……...	21
11	Frequency and percent distribution of salt importers/traders by variables related to selling practices of salt per island……..	24
12	Frequency and percent distribution of salt importers/traders by variables related to marketing and distribution practices of salt per island.…….	26
13	Frequency and percent distribution of salt importers/traders by practice of iodizing non-iodized salt per area……..	27
14	Frequency and percent distribution of salt importer/traders and producers by respondents' profile per island……...	29
15	Frequency and percent distribution of salt importer/traders and producers by variables related to guidelines on salt iodization per island……..	31
16	Frequency and percent distribution of salt importer/traders and producers by variables related to guidelines on salt iodization per island……..	33
17	Frequency and percent distribution of salt importer/traders and producers by variables related to equipment used during salt iodization per island……...	37
18	Frequency and percent distribution of salt importer/traders and producers by	39

No.	Title	
	variables related to iodine levels during salt iodization per island……	
19	Frequency and percent distribution of salt importer/traders and producers by method of salt iodization and reported use of iodized salt per island……	42
20	Frequency and percent distribution of salt importer/traders and producers by method used in testing iodized salt during production per island……..	43
21	Frequency and percent distribution of salt importer/traders and producers by packaging material used when re/packing iodized salt per island……...	44
22	Frequency and percent distribution of salt importer/traders and producers by availability of first-aid facility per island……..	46
23	Frequency and percent distribution of salt importer/traders and producers by variables related to storage, handling and distribution of iodized salt per island……..	48
24	Frequency and percent distribution of salt importer/traders and producers by availability of forms for record keeping per island……	49

LIST OF FIGURES

No.	Title	
1	Proportion of salt importer/traders and producers with incomplete facilities by presence of the specified facilities needed in the production area……	36
2a	Proportion of salt importer/traders and producers interviewed by classification of computed iodine levels (ppm) using the revised IRR.....	40
2b	Proportion of salt importer/traders and producers interviewed by classification of computed iodine levels (ppm) using the old IRR….....	40
3	Proportion of non-compliant salt importer/traders and producers whose packaging has the required specified information……	45
4	Proportion of salt importer/traders and producers who have the specific protective clothing for use during salt iodization……..	47

A Survey of Salt Importers, Producers and Traders in the Philippines: an Evaluation of Internal and External Quality Assurance and Control

INTRODUCTION

Background

A comprehensive survey on the salt industry in the Philippines was conducted by the Nutrition Center of the Philippines (NCP) in collaboration with the then Nutrition Service of the Department of Health, with funding assistance from UNICEF. The survey was conducted in 1993 among the salt producers from selected provinces in Luzon [Solon et al., 1994 and Solon et al., 1995], Visayas and Mindanao [Solon et al., 1994]. Salt traders from Visayas and Mindanao were also included in the survey. Salt producers were interviewed on their production, storage, and marketing practices. Salt traders were also asked on their purchasing practices. The survey also included questions on their willingness to iodize the raw salt they produced or purchased.

Data obtained from the survey were used in the planning and formulation of the National Salt Iodization Program (NSIP) in the country. The NSIP is the primary approach of the country in battling iodine deficiency disorder in our population. Included herewith is the drafting of the Republic Act 8172 or An Act for Salt Iodization Nationwide (ASIN) Law in 1995 [Congress of the Philippines, 1996]. The ASIN Law has been in effect since 1996, guided by its implementing rules and regulations (IRR). The IRR has been revised in 2007 to strengthen support and fast track the implementation of the law [NNC Governing Board, 2007].

As a continuing support to the NSIP, several studies have been conducted by NCP to provide evidenced-based support to the program. A case study by NCP described the manpower, production, storage, packaging and conduct of quality checks of an iodization plant to its product [Solon et al., 1997]. Several stability studies of iodine in iodized salt sold through the traditional “takal” method were also conducted by NCP [Solon et al., 1998 and Maramag et al., 2007]. A survey done among the salt retailers in the public market and sari-sari stores in selected provinces in Luzon, Visayas and Mindanao also gave a comprehensive description of the Philippine salt industry at the retail level [Solon et al., 1999].

The National Nutrition Surveys conducted by the Food and Nutrition Institute (FNRI) every 5 years from 1998 to 2008 used urinary iodine excretion (UIE) levels to assess severity of iodine deficiency disorder (IDD). Median UIE levels showed improvement among the 6 to 12 year old children [FNRI, 2001, 2006 and 2008]. From 71 μg/L in 1998 (insufficient iodine intake) to 201 μg/L (above requirements) in 2003 to 132 μg/L (adequate iodine intake) in 2008 was observed. However, comparing the median UIE per region from the 2008 data showed a wide range of UIE levels, from an insufficient intake of 68 μg/L (Davao region) reflecting mild iodine deficiency to as high as 233 μg/L (Cagayan Valley region), may pose a slight risk for iodine intake in the overall population

[WHO/UNICEF/ICCIDD, 2007]. The median UIE of lactating and pregnant women was inadequate at 81 μg/L and 105 μg/L [FNRI, 2010].

Using the rapid test kit (RTK), 81% of the total household salt surveyed in 2008 contained potassium iodate [FNRI, 2008]. This was an increase of 25% from 2003. Based on the WHO 2007 guidelines, 90% of household should be using iodized salt with an iodine level of >15 to <40 ppm to indicate that there is sustainable elimination of iodine deficiency [WHO/UNICEF/ICCIDD, 2007]. However, when iodine level in a subsample of the iodized salt collected from households was determined using the WYD Iodine checker, the median iodine value of household's iodized salts for the entire Philippines was 5.3 ppm with only 25.2% of household salts having an iodine level of >15 ppm.

The data showed that there was poor correlation between the proportion of households with salt that tested positive for potassium iodate using RTK and the UIE levels. For instance, Davao was found to have a low median UIE level of 50 μg/L among lactating women but with high proportion of households with salt that tested positive for potassium iodate using RTK (96.3%). The same patterns can be observed in Eastern Visayas, Northern Mindanao and CARAGA regions.

The wide range of UIE levels and the lack of correlation of UIE levels with iodized salt usage may imply gaps in the distribution of iodized salt and variability in the implementation of quality assurance and quality control on produced and imported iodized salt. These would, in turn, result in a wide variability in the iodine content of the iodized salt available in the market.

There is thus a need to validate the supply of salt produced locally and imported into the country and document the quality assurance (QA) and quality control (QC) systems being practiced by the salt industry. This is to determine if the set of processes designed to ensure that the concentration of iodine in salt are effective and are being implemented by the iodized salt producers. We need to establish the degree of implementation, or the lack of it, of the recommended QA and QC systems especially among medium to large- scale salt producers and importers who have the monopoly of the market. Further, we have to ascertain if the set of standards set by the guidelines on salt iodization on the quality of iodized salt that are available in the market are being met. Documentation of these practices will inform policy-makers as to the state of the salt industry's QA and QC system and therefore guide them in the determination, assessment and formulation of the assistance needed by the salt industry to further improve the salt iodization program in the country.

General Objective

1. To validate the registry of large and medium-sized salt producers, importers and traders
2. To evaluate existing quality assurance / control systems and practices of the salt industry.

Specific Objectives

1. To describe the location, distribution, size and scale of production of salt importers and producers;
2. To document external quality assurance and control systems and practices;
3. To document and evaluate the internal quality assurance control systems and practices of salt producers and importers.
4. To plot the coordinates of location and estimated boundaries of existing salt producers.

METHODS

Field interview and evaluation of quality assurance and quality control systems were conducted from May 4, 2010 to July 09, 2010. For each site, data on salt production and quality assurance and control were simultaneously collected.

Social Preparation

Officials from the 1) Food and Drug Administration (FDA); 2) Association of Salt Producers, Traders and Allied Industries, Inc. (ASPTAI, Inc); 3) Department of Health (DOH); and 4) National Nutrition Council (NNC) were met to orient them about the study, to request assistance and to request for the registry of salt producers and importers/traders, if there is any. Local government units such as the regional offices of FDA and the Department of Trade and Industry (DTI) were also contacted to inform them of the survey and to request for a registry of salt producers and importers/traders.

The registry of salt producers and importers/traders obtained from the FDA, local government units and from the previous surveys conducted by the NCP in the 1990s were consolidated and was used during the fieldwork.

Development and pre-testing of interview schedules and audit protocol

Interview schedules were developed for this study. The information to be obtained included: a) company profile, b) procedures on production, storage, packaging, marketing and distribution, c) purchasing practices, and d) salt iodization practices.

Based on the guidelines on quality assurance of salt[1], an audit checklist was created by the

[1]The Sub-committee on Standardization of the Salt Iodization Program. Guidelines on quality assurance for salt iodization. December 1997.

team. The checklist covered knowledge on the guidelines on salt iodization and the requirements regarding personnel, facilities, safety and sanitation, and different phases of the salt iodization process. Particular to the iodization process, the study evaluated the procedures for the following: 1) receiving and storage of raw materials (salt and fortificant); 2) facilities requirement; 3) quality assurance system for each type of iodization process; 4) packaging; 5) labeling; and 6) handling and distribution.

The interview schedules [Annexes 1 to 3] and the audit protocol were pre-tested prior to the actual data gathering activity to assure clarity of the questions to the respondent and to minimize errors in the recording of responses. Each was pre-tested among purposively selected salt producers and salt importer/trader.

Recruitment and training of Field Interviewers

Field interviewers were hired and trained on the accomplishment of the Interview Schedules and on the editing and validation of responses. They were also trained on how to conduct quality auditing by a certified auditor and on the use of the Garmin GPSMAP 76Cx and GPSMAP 60CSx (Garmin Ltd., Kansas City, USA), equipment used to plot the location of the survey respondents or their salt manufacturing area.

Provincial survey of salt producers and importers/traders

The survey was carried out in selected provinces in Luzon, Visayas and Mindanao [Table 1].

Table 1. Provinces in Luzon, Visayas and Mindanao included in the survey

Luzon	Visayas	Mindanao
Ilocos Sur	Iloilo	Misamis Oriental
Ilocos Norte	Guimaras	General Santos City, Cotabato
La Union	Negros Occidental	Davao
Pangasinan	Negros Oriental	Zamboanga
Bulacan	Cebu	
Occidental Mindoro		
Batangas		

Prior to the actual interview, the field interviewers conducted courtesy calls to the Provincial Health Officers and Municipal Health Officers in the target areas. The local government units were informed of the survey and were asked to validate the consolidated list.

Medium- to large-scale salt producers and importers (>300 MT) were visited and interviewed. In addition, subsistence and small-scale salt producers that are

geographically close to each other were included in the survey.

The key informants of the survey were the owner or the caretaker of salt producers/importers/traders operating in the selected provinces. Prior to the interview, each key informant was asked to sign a confidentiality letter [Annex 4].

The coordinates of each salt producer and importer were also obtained using a GPS unit (GPSMAP 76Cx or GPSMAP 60CSx)

Data processing and analysis

Data was entered using FileMaker Pro 10.0 v3 software (FileMaker, Inc., California, USA**)**. Data processing and quantitative analysis was done using Stata v9.2 (StataCorp, Texas, USA**)**. Dominant themes were determined using qualitative analysis of respondent's answers on open-ended questions. Maps were generated using Garmin BaseCamp (Garmin Ltd., Kansas City, USA).

RESULTS

The consolidation of existing lists of salt producers, traders and importers from the FDA, local government units and previous NCP surveys resulted in a total of 510 producers, and 114 traders/importers identified as target respondents. However, during the field survey it was determined that the listings and the classifications of salt manufacturers to producers, traders/importers or retailers were not accurate. For instance, several respondents listed as salt producers from Negros Oriental have already stopped salt production and have instead shifted to repacking and retailing salt. Several salt manufacturers in Pangasinan listed as producers/refiners from the official government list were salt repackers and retailers. The list of salt manufacturers from FDA also was not updated, i.e. establishments included in the lists have already been non-operational for several years.

I. Salt Producers

Respondent's profile

A salt producer in this survey is defined as those producing raw or non-iodized salt. Detailed results of the survey among salt producers are in Annex 5. A total of 375 salt producers were interviewed during the field visits [Table 2] with the provinces of Pangasinan and Occidental Mindoro having the most number of salt producers interviewed. Based on the consolidated lists from various agencies, 17% were already closed while about 15% cannot be located. The names of salt producers listed on the consolidated lists who were not found were unknown in the area. Thus, nearly 1/3 of those in the existing lists were probably no longer operating.

Majority of the producers that could not be located were in Pangasinan, Bulacan and Iloilo. Majority of producers that closed were in Occidental Mindoro, Zamboanga, Bulacan and Pangasinan.

Nine respondents refused to join the survey citing the following reasons: 1) no permission from the owner of the salt farm to answer the questions; or 2) busy doing work. Thus, 97.6% among the 384 salt producers that we approached participated in the survey.

Table 2. Frequency and percent distribution of salt producers by interview status per province

Province	Interviewed		Refused		Closed		Cannot be located		Total
	n	%	n	%	n	%	n	%	
Luzon									
Ilocos Sur	23	100.0	0	0	0	0	0	0	23
Ilocos Norte	22	78.6	0	0	6	21.4	0	0	28
La Union	3	60.0	0	0	0	0	2	40.0	5
Pangasinan	101	65.6	3	1.9	10	6.5	40	26.0	154
Bulacan	21	47.7	2	4.5	11	25.0	10	22.7	44
Occidental Mindoro	93	69.4	3	2.2	36	26.9	2	1.5	134
Visayas									
Iloilo	30	52.6	0	0	2	3.5	25	43.9	57
Guimaras	44	93.6	0	0	0	0	3	6.4	47
Negros Occidental	17	94.4	1	5.6	0	0	0	0	18
Negros Oriental	6	60.0	0	0	4	40.0	0	0	10
Cebu	5	31.2	0	0	9	56.3	2	12.5	16
Mindanao									
Misamis Oriental	6	75.0	0	0	2	25.0	0	0	8
General Santos City	1	100.0	0	0	0	0	0	0	1
Zamboanga	3	15.0	0	0	14	70.0	3	15.0	20
Total	**375**	**66.4**	**9**	**1.6**	**94**	**16.6**	**87**	**15.4**	**565**

More than one-third of the salt producers interviewed have been operational for 10 years or less [Table 3]. There are a few producers (8%) who have been producing salt for more than 50 years.

Availability of business permits and licensed to operate

Six percent (6%) of respondents were able to show documentation of business registration [Table 3]. The documents shown were either the Mayor's permit issued by the municipality and/or a business permit issued by the DTI or/and the Bureau of Internal Revenue (BIR). Almost half of the respondents (47%) claimed they registered their business as salt producers, but were unable to show the registration documents. The reasons cited for failure to show documentation were that the papers are at home or with the owner or another person or the papers were still being processed. A significant proportion (42%) admitted not registering their business with any government agency. Some reasons given for not registering their business are the following: seasonal operation, small-scale operation or expensive to register.

A similar trend was seen when respondents were asked if they have a license to operate issued by the FDA, 51% claimed they had a license but failed to show this [Table 3]. A significant proportion (43%) also did not have a license to operate.

Table 3. Frequency and percent distribution of salt producers by respondents' profile per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
N	***262***		***102***		***10***		***374***	
Years operational (yr)								
<=10	87	33.2	43	42.2	2	20.0	132	35.3
>10 and <=25	69	26.3	28	27.5	3	30.0	100	26.7
>25 and <=50	82	31.3	27	26.5	4	40.0	113	30.2
>50	24	9.2	4	3.9	1	10.0	29	7.8
N	***263***		***102***		***10***		***375***	
Business registration status								
Not registered	106	40.3	50	49.0	0	0.0	156	41.6
Registered, document not shown	122	46.4	46	45.1	9	90.0	177	47.2
Registered, document shown	21	7.9	0	0.0	0	0.0	21	5.6
Unknown	14	5.3	6	5.9	1	10.0	21	5.6
Licensed to operate status								
Not licensed	109	41.4	51	50.0	0	0.0	160	42.7
Licensed, document not shown	136	51.7	47	46.1	9	90.0	192	51.2
Licensed, document shown	1	0.4	0	0.0	0	0.0	1	0.3
Unknown	17	6.5	4	3.9	1	10.0	22	5.9

Salt production process

Salt production methods

There are two methods of producing salt: solar evaporation and cooking [Table 4]. In the solar evaporation method, water is removed by exposing the concentrated brine under the sun while in the cooking method water is removed by exposing open pans containing the concentrated brine to heat. Both methods produce salt with the solar evaporation method producing coarse salt while the cooking method produces finer granules of salt. Detailed description of the salt production methods is in Annex 6.

Most salt producers use solar evaporation to produce salt. Salt producers from Ilocos Sur, Ilocos Norte, La Union and one-third of producers from Pangasinan use the cooking method in salt production.

Land area for salt production

The land area used for salt production was categorized according to reported area in hectares, namely, less than or equal to 1, greater than 1 to less than or equal to 10, greater than 10 to less than 25, greater than 25 to less than or equal to 50 and to greater than 50 hectares [Table 4]. More than half (56%) of the respondents have greater than 1 to less than or equal to 10 hectares of land area allotted for salt production. Almost all of the large–scale salt producers, located in Luzon provinces, have more than 50 hectares of land area used for salt production.

Type of salt beds

Salt producers from Luzon provinces used ceramics, which may either, be broken red ceramic tiles or jars like "burnay", as salt beds [Table 4]. On the other hand, majority of the salt producers from Visayas and Mindanao use plastic sheets. About 20% of the salt producers from Occidental Mindoro are also using plastic sheets while about 40% are using cement, sometimes mixed with "apog", as salt beds.

Type of salt produced

As expected, salt produced by all salt producers from Ilocos Sur, Ilocos Norte, La Union and 1/3 of salt producers from Pangasinan is fine salt because salt is produced using the cooking method. The salt producers from Bulacan, Visayas and Mindanao provinces produce only coarse salt.

Quantity of salt produced

The information was obtained in response to the question "how much is your total salt production last year?". It was usual for the respondents to give the estimated number of sacks produced last year. A follow-up question, "what is the weight of the salt per sack?" will then be asked. Based on this information, the total amount of produced raw salt will

be derived by multiplying the number of sacks by the weight per sack. The resulting amount was converted to metric tons (MT) to standardize the unit of measurement for the purpose of this report.

Only 346 of 375 (92%) of respondents have information on the quantity of salt produced in the previous year (2009). Three respondents did not produce salt last year while 26 respondents either refused to answer the question or did not know the answer. Among the 346 respondents who answered the question, 9.5% produced salt not exceeding 2 MT (subsistence producers), 72% produced salt ranging from more than 2 MT to 300 MT (small-scale producers), 17.3% produced salt ranging from more than 300 MT to 2,000 MT (medium-scale producers) and 1.2% produced salt exceeding 2,000 MT (large-scale producers) [Table 4].

Use of salt produced

Salt is produced for human consumption, food processing, industrial use and animal consumption. Salt for human consumption are known to salt producers as commercial salt since this is the one that is available in the market and usually bought by consumers in retail packs either through "takal" or as repacked. In the "takal" retail system, salt is displayed in open heap where salt is only repacked in plastic bag upon purchase of customers. Salt used for food processing, as used in this survey, is salt used for processing of food such as fish sauce ("patis"), fish or shrimp paste ("bagoong"), canned or cured meats, ice or ice cream. Salt used for tanning or curing leather was classified as industrial salt. Salt used for animal consumption are those salt mixed with animal feeds. Salt licks are also produced (i.e. "tedted" from Ilocos region). Salt licks are salt deposits or hardened formed salt given to animals such as cattle and horses for them to lick as a source of minerals.

About 91% of the respondents produced salt for human/commercial (salt sold at the market), 75% produced salt for food processing and 27% produced salt for animal consumption [Table 4]. Only 7% of the respondents reportedly produce salt for industrial use. In the IRR of ASIN Law, only industrial salt, salt meant for treatment, processing and/or manufacturing of non-food products, are exempted from salt iodization.

Table 4. Frequency and percent distribution of salt producers by variables related to production of non-iodized salt per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
Salt production method								
N	***263***		***102***		***10***		***375***	
Solar evaporation	180	68.4	102	100.0	10	100.0	292	77.9
Cooking	83	31.6	0	0.0	0	0.0	83	22.1
Land area use for salt production (hectare)*								
N	***180***		***102***		***10***		***292***	
< = 1	24	13.3	17	16.7	0	0.0	41	14.0
>1 & <=10	96	53.3	59	57.8	8	80.0	163	55.8
>10 & <=25	20	11.1	15	14.7	0	0.0	35	12.0
>25 & <=50	13	7.2	7	6.9	2	20.0	22	7.5
>50	10	5.6	1	1.0	0	0.0	11	3.8
Unknown	17	9.4	3	2.9	0	0.0	20	6.9
Type of salt beds**+								
N	***180***		***102***		***10***		***292***	
Ceramic	126	70.0	22	21.6	4	40.0	152	44.7
Stones	15	8.3	2	2.0	4	40.0	21	7.2
Cement	37	20.6	4	3.9	0	0.0	41	12.1
Plastic sheets	19	10.6	79	77.5	5	50.0	103	30.3
Wood	14	7.8	0	0.0	0	0.0	14	4.1
Others	8	4.4	1	1.0	0	0.0	9	3.1
Types of salt produced								
N	***260***		***102***		***10***		***372***	
Coarse	177	68.1	102	100.0	10	100.0	289	77.7
Fine	83	31.9	0	0.0	0	0.0	83	22.3
Quantity of salt produced the previous year (MT)								
N	***250***		***87***		***9***		***346***	
<=2	28	11.2	5	5.8	0	0.0	33	9.5
>2 & <=300	162	64.8	79	90.8	8	88.9	249	72.0
>300 & <=2,000	56	22.4	3	3.5	1	1.1	60	17.3
>2,000	4	1.6	0	0.0	0	0.0	4	1.2
Use of produced salt**+								
N	***263***		***100***		***10***		***373***	
Human consumption	231	87.8	96	96.0	6	60.0	333	89.3
Food processing	179	68.1	92	92.0	7	70.0	278	74.5
Animal consumption	66	25.1	31	31.0	4	40.0	101	27.1
Industrial processing	26	9.9	0	0.0	1	10.0	27	7.2
All of the above	6	2.3	0	0.0	0	0.0	6	1.6

*Limited to salt producers using solar evaporation method; +Multiple responses

Storage and packaging practices

One-third (26%) of the respondents did not have a warehouse to store harvested salt [Table 5]. Most of the respondents who have no warehouses were from Ilocos Sur, Pangasinan and Occidental Mindoro.

Most producers whether they have warehouse or not for storing harvested salt, store salt by directly dumping the harvested raw salt on the ground [Table 5]. The ground may either be lined with canvas ("trapal/lona"), plastic sheets, woven bamboo mats ("sawali"), used sack or rice hull or not lined at all. Harvested salt were also packed in sacks (37% for those with warehouses and 50% for those without warehouses). Some respondents store their harvested salt in "tabungos", a woven basket or a wooden pen usually made of bamboo or in "kuribot/kaing/tikles". Among respondents without warehouses, harvested salt was usually dumped at the sides or between salt beds, sometimes covered with canvas, used sack or woven bamboo mats.

Table 5. Frequency and percent distribution of salt producers by variables related to storage and packaging practices of non-iodized salt per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
Availability if warehouse for storage								
N	***263***		***102***		***10***		***375***	
Available	185	70.3	83	81.4	10	100.0	278	74.1
Packaging used when storing salt in warehouses*								
N	***186***		***84***		***10***		***280***	
None / Dumped on floor	123	66.1	53	63.9	9	90.0	185	66.1
Sack	65	34.9	34	41.0	4	40.0	103	36.8
Woven basket	4	2.2	1	1.2	0	0.0	5	2.7
Packaging used when storing salt for those without warehouses*								
N	***77***		***18***		***0***		***95***	
None / Dumped on the ground	44	56.4	5	26.3	0	0.0	49	51.6
Sack	32	41.0	15	79.0	0	0.0	47	49.5
Woven basket	6	7.7	0	0.0	0	0.0	6	6.3
Can	1	1.3	0	0.0	0	0.0	1	1.1

*Multiple responses

Selling practices

Packaging material used when selling salt

Almost all (99%) respondents sold salt in sacks [Table 6]. These sacks were usually second-hand, previously used to pack rice, sugar, flour or fertilizer. The salt is usually sold in bulk (69%), weighing more than 50 kgs per sack [Table 6]. Most packaging used when selling salt had no labeling or information on the company name, manufacturers' name and date of production [Table 6].

Price of salt per kilogram

The type of salt produced influenced the wide ranged of prices of salt [Table 6]. Refined salt was more expensive than coarse salt, selling as much as PhP 15.00 per kg. The usual selling price of commercial salt was between PhP 1.00 to 3.00 per kg (55%). However, almost half (48%) of respondents from Occidental Mindoro sell salt to as low as PhP 0.40 per kg. Subsistence respondents from Ilocos region trade their salt for rice, usually trading 6 sacks of salt to 1 sack of rice.

Quantity of salt sold the previous year

Only 83% answered the question on the quantity of salt sold in the previous year. Three of the respondents did not produce salt in the previous year while 61 either did not know the answer or refused to answer the question. Among those who responded, 44.4% reported selling between 10 to less than 100 MT of salt the previous year [Table 6]. Respondents from Bulacan, Pangasinan, Occidental Mindoro, Iloilo, Guimaras and General Santos City reported selling more than 300 MT of salt.

Table 6. Frequency and percent distribution of salt producers by variables related to selling practices of non-iodized salt per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
Packaging used when selling*								
N	***263***		***102***		***10***		***375***	
Sack	259	69.8	102	27.5	10	2.7	371	98.9
Packing sizes available when selling (kg)*								
N	***263***		***102***		***10***		***375***	
<= 5	6	2.3	0	0.0	0	0.0	6	1.6
>5 & <=50	123	46.8	9	8.8	8	80.0	140	37.3
>50	161	61.2	96	94.1	2	20.0	259	69.1
Available information on the package label								
N	***261***		***102***		***10***		***373***	
None	225	86.1	99	97.1	0	0.0	334	89.5
Incomplete	22	8.4	3	2.9	0	0.0	25	6.7
Complete	14	5.4	0	0.0	0	0.0	14	3.7
Selling price per kilogram (PhP)								
N	***219***		***88***		***8***		***315***	
<1.00	38	17.4	3	3.4	0	0.0	41	13.0
>=1.00 & <3.00	93	42.5	73	83.0	6	75.0	172	54.6
>=3.00 & <7.00	40	18.3	12	13.6	2	25.0	54	17.1
>=7.00 & <10.00	16	7.3	0	0.0	0	0.0	16	5.1
>=10.00	32	14.6	0	0.0	0	0.0	32	10.2
Quantity sold the previous year (MT)								
N	***229***		***76***		***6***		***311***	
<10	35	15.3	21	27.6	1	16.7	57	18.3
>=10 & <100	91	39.7	46	60.5	1	16.7	138	44.4
>=100 & <200	37	16.2	4	5.3	2	33.3	43	13.8
>=200 & <300	15	6.6	1	1.3	1	16.7	17	5.5
>=300	51	22.3	4	5.3	1	16.7	56	18.0

*Multiple responses

Distribution of salt

Difficulties were encountered when the question "where is the usual destination of raw salt sold?" was asked among the respondents because most respondents claim that they are not familiar where their salt are being sold, from where their buyers come from or where their buyers brought their salt. Nevertheless, almost half of the respondents (44.1%) reported that their salt is sold within their provinces. Some respondents from Luzon (18.9%) assumed their salt reaches Metro Manila since the traders buying their salt have warehouses in Malabon. Salt from Ilocos, Pangasinan and Bulacan is brought to other Luzon provinces such as Kalinga Apayao, Cagayan Valley, Abra, Isabela, Bicol, Nueva Ecija, Baguio, Bataan, Nueva Vizcaya, Zambales, Quezon and Laguna. Salt from Occidental Mindoro reportedly reaches other provinces in Luzon such as Palawan, Marinduque and Batangas; the provinces in the Visayas such as Iloilo, Aklan, Samar, Leyte and Cebu, and; the provinces in Mindanao, such as Zamboanga and Davao. On the other hand, most respondents from the Visayas reported that their salt reaches nearby provinces such as Aklan, Masbate and Palawan. All respondents from Mindanao reported that their salt is only sold within their provinces.

Iodization of salt

When the respondents were asked if they iodize the salt they produce, only 15% answered positively [Table 7]. During the interview, it was found out that iodization was done only when there are already buyers in the farm or when there are buyers who will request for iodized salt. It was also usual for the buyers to provide the fortificant solution and ask the producers to iodize the salt prior to packing. No respondents from Bulacan, Cebu, Misamis Oriental and Zamboanga iodize their salt (N=35).

Among those who claimed to iodize their harvested salt prior to selling, only 1 was able to show his LTO document issued by the FDA [Table 7]. Most of those (60.4%) iodizing salt were small-scale salt producers, producing between 2 to less than or equal to 300 MT of non-iodized salt [Table 7]. Three out of the 4 large-scale salt producers are iodizing their non-iodized salt.

Table 7. Frequency and percent distribution of salt producers by practice of iodizing salt per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
Iodization of salt								
N	***263***		***102***		***10***		***375***	
Iodizing	41	15.6	13	12.8	1	10.0	55	14.7
Status of License to Operate for those iodizing salt								
N	***41***		***13***		***1***		***55***	
Not licensed	12	29.3	6	46.2	0	0.0	18	32.7
Licensed, document shown	1	2.44	0	0.0	0	0.0	1	1.8
Licensed, document not shown	28	68.3	7	53.9	1	100.0	36	65.5
Classification of salt producers according to production quantity for those iodizing salt								
N	***41***		***11***		***1***		***53***	
Subsistence	5	12.2	2	18.2	0	0.0	7	13.2
Small-scale	23	56.1	9	81.8	0	0.0	32	60.4
Medium-scale	10	24.4	0	0.0	1	100.0	11	20.8
Large-scale	3	7.3	0	0.0	0	0.0	3	5.7

II. Salt Importers/Traders

Respondents' profile

Salt importers/traders in this survey are those buying and selling raw or non-iodized salt, iodized salt or both. Detailed results of the survey among salt importers/traders are in Annex 7. One hundred fourteen (114) importers/traders were targeted for the survey based on the consolidated list. Of the 114, 15 (13%) were already closed while 24 (21%) cannot be located. Thus, only 65 respondent importers and traders were requested to participate. Only 39 of 65 (60%) participated while the rest (40%) refused to participate. [Table 8]. Those who refused to participate cited the following reason: 1) they are not the owner of the business; 2) busy at work; 3) they do not accept interviews, or 4) the owner is not available for an interview. Getting the consent of traders to participate in the survey took time, as they would usually require formal request letter, endorsement letters from relevant agency and/or permissions from the company head. Majority of refusals came from Metro Manila companies.

Table 8. Frequency and percent distribution of salt importers/traders by interview status per area

Province	Interviewed		Refused		Closed		Cannot be located		Total
	N	%	n	%	n	%	n	%	
Luzon	***15***	***30.0***	***14***	***28.0***	***10***	***20.0***	***11***	***22.0***	***50***
La Union	1	100.0	0	0.0	0	0.0	0	0.0	1
Pangasinan	5	35.7	0	0.0	1	7.2	8	57.1	14
Batangas	2	66.7	1	33.3	0	0.0	0	0.0	3
Occidental Mindoro	4	66.7	2	33.3	0	0.0	0	0.0	6
Metro Manila	3	11.5	11	42.3	9	34.6	3	11.5	26
Visayas	***15***	***44.1***	***6***	***17.6***	***2***	***5.9***	***11***	***32.4***	***34***
Iloilo	2	20.0	2	20.0	0	0.0	6	60.0	10
Guimaras	3	50.0	0	0.0	0	0.0	3	50.0	6
Negros Occidental	6	66.7	1	11.1	1	11.1	1	11.1	9
Cebu	4	44.4	3	33.3	1	11.1	1	11.1	9
Mindanao	***9***	***45.0***	***6***	***30.0***	***3***	***15.0***	***2***	***10.0***	***20***
Misamis Oriental	2	66.7	1	33.3	0	0.0	0	0.0	3
Davao	3	60.0	1	20.0	1	20.0	0	0.0	5
General Santos City	1	33.3	2	66.7	0	0.0	0	0.0	3
Zamboanga	3	33.3	2	22.2	2	22.2	2	22.2	9
TOTAL	**39**	**34.2**	**26**	**22.8**	**15**	**13.2**	**24**	**21.1**	**114**

Almost half (46%) of the respondents have been operational for not more than 10 years [Table 9]. Some respondents (21.6%) have been trading salt between 25 to 50 years.

Availability of business permits and licensed to operate

Almost all of the respondents (89%) reported that they had a business registration [Table 9]. However, only 33% were able to show the documents for registration. The documents were either Mayor's permit or a business registration from the DTI. The documents were not shown either because: 1) the registration documents are with another office or with the owner of the company; or 2) are still being renewed. When respondents were asked if they have a license to operate from the FDA, 72% answered yes but only 13% of the respondents were able to show the document [Table 9].

Table 9. Frequency and percent distribution of salt importers/traders by respondents' profile per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	N	%	n	%
Years operational (yr)								
N	***14***		***15***		***8***		***37***	
<=10	7	50.0	5	33.3	5	62.5	17	46.0
>10 and <=25	3	21.4	7	46.7	2	25.0	12	32.4
>25 and <=50	4	28.6	3	20.0	1	12.5	8	21.6
Registration of business permit								
N	***15***		***15***		***9***		***39***	
Not registered	2	13.3	1	6.7	1	11.1	4	10.3
Registered, document not shown	7	46.7	10	66.7	5	55.6	22	56.4
Registered, document shown	6	40.0	4	26.7	3	33.3	13	33.3
Availability of licensed to operate								
N	***15***		***15***		***9***		***39***	
Not licensed	5	33.3	3	20.0	3	33.3	11	28.2
Licensed, document not shown	9	60.0	10	66.7	4	44.4	23	59.0
Licensed, document shown	1	6.7	2	13.3	2	22.2	5	12.8

Purchasing practices

Type of salt

The respondents purchased either non-iodized, iodized or both types of salt [Table 10]. A third of them (33%) purchased iodized salt only while 41% purchased non-iodized salt only.

Sources of salt

Non-iodized salt were usually purchased from local salt producers (72%). These producers were usually from Bulacan, Occidental Mindoro, Pangasinan and from producers within their provinces. Australia was the usual source of imported non-iodized salt. Other sources of imported non-iodized salt were China and Thailand.

Majority of the respondents (86%) purchased iodized salt from local companies. The large or major salt local importers were the usual sources of the other respondents. Iodized salt were also imported from Australia and China.

Form of salt

Almost all of the respondents (96.2%) purchased non-iodized salt in coarse form [Table 10]. Coarse salt comes in 2 kinds, small granule-size salt and rock salt, the latter was described by the traders as imported bigger sized-granulated non-iodized salt. Rock coarse salt is either refined by the traders and iodized before selling or sold to salt producers from Luzon provinces as the raw ingredient in cooking the fine salt. Half of the respondents (50%) who purchased coarse salt purchased rock salt. On the other hand, iodized salt purchased are usually (78.3%) in the refine/fine form [Table 10].

Use of salt

Majority of the purchased non-iodized (55%) and iodized (87%) salt are for human consumption [Table 10]. Other use of salt is for industrial processes, food-manufacturing and animal consumption.

Quantity of salt purchased

Only 22 out of the 26 traders/importers of non-iodized salt (85%) answered the question "what was your total salt purchases last year?". Half of the respondents (50%) reported purchasing more than 300 MT of non-iodized salt last year. Out of the 21 importers/traders of iodized salt who gave information on the quantity of iodized salt purchased last year, half (52%) reported purchasing between 2 to less than or equal to 300 MT [Table 10]. Thirty-eight percent (38%) purchased more than 300 MT of iodized salt the previous year.

Table 10. Frequency and percent distribution of salt importers/traders by variables related to purchasing practices of salt per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
Type of purchased salt								
N	***15***		***15***		***9***		***39***	
Non-iodized	5	33.3	7	46.7	4	44.4	16	41.0
Iodized	4	26.7	5	33.3	4	44.4	13	33.3
Both	6	40.0	3	20.0	1	11.1	10	25.6
Sources of non-iodized salt*								
N	***11***		***10***		***5***		***26***	
Philippines	8	72.7	8	80.0	1	20.0	17	65.4
Australia	4	36.4	2	20.0	4	100.0	10	38.4
China	0	0.0	1	10.0	0	0.0	1	3.9
Thailand	0	0.0	1	10.0	0	0.0	1	3.9
Sources of iodized salt*								
N	***10***		***7***		***4***		***21***	
Philippines	8	80.0	7	100.0	4	100.0	18	85.7
Australia	3	30.0	0	0.0	0	0.0	3	14.3
China	1	10.0	1	14.3	0	0.0	2	9.5
Form of purchased non-iodized salt*								
N	***11***		***10***		***5***		***26***	
Fine	3	27.3	2	20.0	0	0.0	5	19.2
Coarse	10	90.9	10	100.0	5	100.0	25	96.2
Form of purchased iodized salt								
N	***10***		***8***		***5***		***23***	
Fine	9	90.0	6	75.0	3	60.0	18	78.3
Coarse	1	10.0	2	25.0	2	40.0	5	21.7
Use of purchased non-iodized salt*								
N	***11***		***10***		***5***		***26***	
Human consumption	7	63.6	8	80.0	4	80.0	19	73.1
Food processing	5	45.5	4	40.0	2	40.0	11	42.3
Animal consumption	3	27.3	1	10.0	0	0.0	4	15.4
Industrial processing	2	18.2	1	10.0	2	40.0	5	19.2
Use of purchased iodized salt								
N	***10***		***8***		***5***		***23***	
Human consumption	10	100.0	8	100.0	5	100.0	23	100.0
Food processing	4	40.0	3	37.5	2	40.0	9	39.1
Animal consumption	3	30.0	0	0.0	0	0.0	3	13.0

*Multiple responses

Table 10. continued

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
Quantity of purchased non-iodized salt (MT)								
N	***9***		***8***		***5***		***22***	
<= 2	2	22.2	1	12.5	0	0.0	3	13.6
>2 & <=300	4	44.4	3	37.5	1	20.0	8	36.4
>300 & <=2,000	3	33.3	3	37.5	0	0.0	6	27.3
>2,000	0	0.0	1	12.5	4	80.0	5	22.7
Quantity of purchased iodized salt (MT)								
N	***8***		***8***		***5***		***21***	
<= 2	1	12.5	0	0.0	0	0.0	1	4.8
>2 & <=300	5	62.5	4	50.0	4	80.0	13	61.9
>300 & <=2,000	1	12.5	3	37.5	0	00.0	4	19.0
>2,000	1	12.5	1	12.5	1	20.0	3	14.3

Storage and packaging practices

Warehouses used for the storage of salt are available for 76% of the respondents [Table 11]. Most of the respondents (74.4%) store non-iodized salt in sacks. However, some traders/importers do not have warehouses or lack warehouses to keep salt in covered storage. Non-iodized salt is dumped directly on the ground or cemented floor, lined with a canvass, rice hull, sack, wood or woven bamboo mats. Salt dumped outside the warehouse is usually covered with a canvass to protect from rain and other contaminants. All iodized salt are packed in sacks. The sacks used were usually made from woven polypropylene that was either brand new or second-hand.

Practice of repacking salt before selling

It was usual for the traders/importers to sell the salt in their original packaging or in the packaging container used during storage [Table 11]. Most of the respondents (55%) who repacked iodized salt prior to selling were those who iodize the non-iodized salt they purchased and those who sell iodized salt at smaller packs.

Packaging material used for repacking salt prior to selling

Of the 8 traders/importers who repacked non-iodized salt prior to selling, 6 of them (75%) repacked the non-iodized salt in sacks [Table 11]. Iodized salt was usually sold in bulk thus, majority of the respondents (73%) repacked iodized salt in sacks [Table 11]. Iodized salt (46%) was also repacked into transparent polyethylene bag.

Labeling information on packaging material

Majority of the respondents (64%) who reported selling non-iodized salt do not have the information label on the packaging used on packed non-iodized salt [Table 11]. The packaging label of non-iodized salt should include at least the company or manufacturer's name, company address and manufacturing date.

Table 11. Frequency and percent distribution of salt importers/traders by variables related to selling practices of salt per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
Availability of storage warehouse								
N	***14***		***15***		***9***		***38***	
Available	10	66.7	14	93.3	5	55.6	29	74.4
Packaging used when storing non-iodized salt								
N	***11***		***10***		***5***		***26***	
Directly on floor	1	9.1	2	20.0	4	80.0	7	26.9
Sack	10	90.9	6	60.0	1	20.0	17	65.4
Both	0	0.0	2	20.0	0	0.0	2	7.7
Practice of repacking non-iodized salt								
N	***11***		***9***		***4***		***24***	
Yes	4	36.4	2	22.2	2	50.0	8	33.3
Packaging used when repacking non-iodized salt								
N	***4***		***2***		***2***		***8***	
Sack	3	75.0	1	50.0	2	100.0	6	75.0
Plastic bag	1	25,00	1	50.0	0	0	2	25.0
Practice of repacking iodized salt								
N	***12***		***9***		***8***		***29***	
Yes	4	33.3	2	22.2	5	62.5	11	37.9
Packaging used when repacking iodized salt								
N	***4***		***2***		***5***		***11***	
Sack	2	50.0	1	50.0	3	60.0	6	54.6
Plastic bag	2	50.0	0	0.0	1	20.0	2	27.3
Both	0	0.0	1	50.0	1	20.0	2	9.1
Labeling information of packaging used in non-iodized salt packs								
N	***10***		***8***		***4***		***22***	
None	7	70.0	5	62.5	2	50.0	14	63.6
Incomplete	2	20.0	2	25.0	0	0.0	4	18.2
Complete	1	10.0	1	12.5	2	50.0	4	18.2

Marketing and distribution

Quantity of salt sold in MT

Only 79% of the respondents who were selling non-iodized salt answered the question on the quantity of non-iodized salt sold the previous year. Among them, 47% reportedly sold more than 500 MT of non-iodized the previous year [Table 12]. All respondents from Mindanao sold more than 500 MT of non-iodized salt. A third of the respondents were able to sell more than 10 but not exceeding 100 MT of their iodized salt the previous year [Table 12].

Selling price of salt

Only 8 out of the 24 importers/traders (33%) who reported selling non-iodized salt answered the question "What is the current selling price of commercial raw salt?" [Table 12]. Among those who answered, more than half (75.0%) reported selling non-iodized salt not more than PhP5.00 per 1 kilogram. On the other hand, half of the respondents who gave their selling price of iodized salt last year (48%) sold iodized salt at much higher price, from more than PhP5.00 to as much as PhP20.00 per 1 kilogram [Table 12].

Distribution of salt

More than a third of the respondents (38%) sold their non-iodized salt within their area. Importers/Traders would usually sell their salt to buyers from nearby provinces. For instance, respondents from Luzon sold their non-iodized salt to traders from Ilocos provinces, Cagayan Valley, Isabela and Nueva Ecija; respondents from Visayas would sell their salt to buyers from Iloilo, Guimaras, Samar, Leyte and Negros Oriental; respondents from Mindanao would sell their salt to Cotabato, Surigao, Sultan Kudarat and Davao.

Similarly, majority of the respondents (69%) sold iodized salt to buyers who are from within their area.

Table 12. Frequency and percent distribution of salt importers/traders by variables related to marketing and distribution practices of salt per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
Quantity of non-iodized salt sold in the previous year (MT)								
N	***8***		***7***		***4***		***19***	
<=10	3	37.5	1	14.3	0	0.0	4	21.1
>10 & <=100	1	12.5	2	28.6	0	0.0	3	15.8
>100 & <=500	2	25.5	1	14.3	0	0.0	3	15.8
>500	2	25.0	3	42.9	4	100.0	9	47.4
Quantity of iodized salt sold in the previous year (MT)								
N	***9***		***7***		***8***		***24***	
<=10	3	33.3	2	28.6	0	0.0	5	20.8
>10 & <=100	2	28.6	2	28.6	4	50.0	8	33.3
>100 & <=500	2	22.2	2	28.6	1	12.5	5	20.8
>500	2	22.2	1	14.3	3	37.5	6	25.0
Selling price of non-iodized salt (kg) in 2010								
N	***1***		***4***		***3***		***8***	
<=5.00	0	0.0	3	75.0	3	0.0	6	75.0
>5.00	1	100.0	1	25.0	0	0.0	2	25.0
Selling price of iodized salt (kg) in 2010								
N	***9***		***9***		***9***		***27***	
<=5.00	1	11.1	7	70.0	6	75.0	14	51.9
>5.00 & <=10.00	6	66.7	2	20.0	2	25.0	10	37.0
>10.00	2	22.2	1	10.0	0	0.0	3	11.1

Iodization practice

Among the traders/importers who reported purchasing and iodizing non-iodized salt, only 65.4% claimed to iodize the non-iodized salt they purchased [Table 13]. Among those who claimed to iodize their non-iodized salt, only 24% were able to show their LTO document.

Table 13. Frequency and percent distribution of salt importers/traders by practice of iodizing non-iodized salt per area

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
Iodization of salt								
N	***11***		***10***		***5***		***26***	
Iodizing salt	5	45.5	7	70.0	5	100.0	17	65.4
Status of License to Operate of those who reported currently iodizing salt								
N	***5***		***7***		***5***		***17***	
Not licensed	5	100.0	5	71.4	3	60.0	13	76.5
Licensed, document shown	0	0.0	2	28.6	2	40.0	4	23.5

III. Quality Assurance/Quality Control

Producers and traders who reported to be presently iodizing raw salt and/or trading iodized salt were interviewed using the Quality Control/Quality Assurance Interview Schedule. This questionnaire was based on the Guidelines on Quality Assurance for Salt Iodization developed by The Sub-committee on Standardization of the Salt Iodization Program and released in 1997. Detailed results of this survey are in Annex 8.

Respondent profile

Most of those (74%) interviewed using the Quality Control/Quality Assurance system were salt producers [Table 14]. Only 19% of those interviewed were able to show business registration documents for 2010 while only 5% were able to show the license to operate document issued by the FDA for 2010.

Documentation requirements

Only 15% of the respondents reported that they have an Operations Manual [Table 14]. However, only two respondents (3%) were able to show their operations manual. The two operation manuals shown contained detailed information on the following: job description of personnel, manufacturing process, good manufacturing process, quality control plan, sanitation and safety procedure and flowchart of manufacturing process. Almost all respondents have incomplete or no documents to serve as a manual or guide for manufacturing of iodized salt. Respondents who reported having the documents but were not able to show the actual documents during the time of the survey were re-categorized under no Operations Manual. The reasons given by the respondent's failure to show the actual documents were either because: documents are at the head office or with someone else or the documents are being revised.

Table 14. Frequency and percent distribution of salt importer/traders and producers by respondents' profile per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
N	***48***		***20***		***6***		***74***	
Type of salt manufacturer								
Producer	41	85.4	13	65.0	1	16.7	55	74.3
Status of business registration								
Not registered	14	29.2	8	40.0	1	16.7	23	31.1
Registered, document not shown	23	47.9	11	55.0	3	50.0	37	50.0
Registered, document shown	11	22.9	1	5.0	2	3.3	14	18.9
Status of Licensed to Operate								
Not licensed	16	33.3	6	30.0	1	16.7	23	31.1
Licensed, document not shown	31	64.6	12	60.0	4	66.7	47	63.5
Licensed, document shown	1	2.1	2	10.0	1	16.7	4	5.4
Availability of an operations manual								
Available	0	0.0	1	5.0	1	16.7	2	2.7

Information on guidelines for salt iodization

The respondents were asked about their knowledge of the guidelines regarding salt iodization (Are you familiar with the guidelines on salt iodization?). However, no actual manual or document on salt iodization was shown to the respondents. Eighty-four percent (84%) of respondents who answered this question reported familiarity with the salt iodization guidelines [Table 15]. Majority of the respondents (89%) who reported familiarity with the guidelines cited the government as their source of information. Information was usually from seminars conducted either by the then Bureau of Food and Drug or by the Municipal Sanitary Inspectors [Table 15]. Some (13%) respondents cited their own company as their source of information; there are companies who conducted seminars on salt iodization among their personnel.

The information known by the salt importers, traders and producers (SITPs) on iodization can be classified into rules and regulations, technical and beneficial knowledge.

Legal knowledge comes from the Act for Salt Iodization Nationwide (ASIN) law, and from seminars given by government officials. Technical knowledge is about the specific process of iodization, as well as the instructions given to them by the owners of the salt farm. Beneficial knowledge details the benefits of iodizing salt.

Regarding legal information, the SITPs seem to have some awareness of the requirements of the ASIN Law. This awareness is combined with seminars and training given by local government officials. Basically, their knowledge is more practical, in that salt must be iodized, before it can be sold. Most also say that salt must be iodized because it is the law.

As to technical knowledge, this consists of instructions on iodization received from owner on the process itself. Interestingly, most of these consist of measurements and ratios needed in the process of iodization.

With beneficial knowledge, some of the respondents offer several benefits of iodized salt, such as disease prevention and improvement of cognitive development.

It is interesting to note that most of this information seems to be external to the SITPs: though they are aware of the benefits and regulations regarding salt iodization, they do not seem to connect it to their own business.

Table 15. Frequency and percent distribution of salt importer/traders and producers by variables related to guidelines on salt iodization per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
Familiarity with guidelines in salt iodization								
N	***47***		***20***		***6***		***73***	
Yes	42	89.4	15	75.0	5	83.3	62	84.0
Information source on guidelines for salt iodization								
N	***41***		***15***		***6***		***61***	
Government	38	92.7	13	86.7	3	60.0	54	88.5
Own company	3	7.3	2	13.3	3	60.0	8	13.1
Media	1	2.4	0	0.0	0	0.0	1	1.6

Receipt raw materials for salt iodization

Receipt of raw materials

Questions on how non-iodized salt and iodine fortificant were being received were asked. Generally, in receiving non-iodized salt, visual check is employed [63%]. Through visual check, the SITPs identify, and clean, if the salt has dirt or other materials in it. In some instances, additional inspection in the form of weight and moisture content checks is done, along with an analysis certificate.

In other cases, no inspection is done by the SITPs. This is because they reason that they produced the non-iodized salt, so they do not need to inspect it anymore.

With regard to potassium iodate supply, there are three sources for the SITPS: large salt producers (e.g., Salinas Foods), government workers (e.g. sanitary inspectors, barangay health workers) and purchasing by *tingi* or small packets (i.e. iodate packaged in ice candy plastic bags and sold per piece) from different organizations. An example is the areas of Iloilo and Guimaras, where there is an organization of differently-abled workers who sell potassium iodate.

Most do not perform any inspection on the iodate they buy, reasoning that the iodate is from someone they trust, such as the owner of the salt farm, a fellow salt producer, or government workers. In cases of inspection, the SITPs employ visual checks, as well as checking of the certificate of analysis and the expiration of the iodate.

Storage practices for raw materials used during salt iodization

Questions on describing their warehouse (Is there an available warehouse for storage of raw salt and other equipment for iodization?), and system of storage (What system of storage and use of raw materials is being followed?) were also asked.

Warehouse

Most of the respondents (68%) have warehouses to store the raw materials [Table 16]. Generally, there were three types of storage areas: a warehouse, an office area and the house of the SITP.

Typically, a warehouse is constructed of galvanized iron sheets for a roof, cement walls and wood flooring. Ventilation was provided through slats in the walls, such as windows, or in some cases, an electric fan. In a few cases, the warehouse was described as a *nipa* hut type of structure.

There were also some SITPs who used their office spaces for storage purposes. In these cases, there were areas inside the office reserved for the salt products, while the potassium iodate solutions, stored in plastic water bottles, were kept in cabinets.

Much like office storage, there were also some SITPs who used their homes for storing equipment and salt products. Usually, the iodized salt and other substances were stored in plastic containers, and placed in a specific area of the house, such as a room or a cabinet.

In a few instances, there were some SITPs who did not have storage space, reasoning that they do not need it, as the iodized salt they produce are sold directly to customers.

System of Storage

Generally, most SITP did not employ any system for storage [Table 16]. Instead, they go by the 'easy to reach/place' rule: the materials were stored where they easily can, so that they can take them out just as easily. This works out well for the SITPs because a lot of them only fortify salt when they already have a buyer lined up.

In a fourth of the cases, the First in, First out (FIFO) system was used. In this system, the SITPs use the materials stored first. The application of this system would be in using up the fortificant bought before buying more fortificant products.

Table 16. Frequency and percent distribution of salt importer/traders and producers by variables related to guidelines on salt iodization per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
Availability of warehouse								
N	***47***		***20***		***6***		***73***	
Yes	31	66.0	14	73.7	4	66.7	49	68.1
System of storage and retrieval for raw materials								
N	***47***		***20***		***6***		***73***	
First in- First out	11	23.4	3	15.0	5	83.3	19	26.0
Top/Front first	5	10.6	7	35.0	1	16.7	13	17.8
No system	14	29.8	7	35.0	0	0.0	21	28.8
Not applicable	17	36.2	3	15.0	0	0.0	20	27.4

Salt iodization

This section describes the utilities required in salt iodization and the methods and processes done by the SITPs in iodizing salt.

Utilities for salt iodization

The SITPs (92%) do not have all utilities required in the production area allotted for salt iodization and packaging. The following utilities that should be adequately provided and were observed if present were as follows: a) potable and sufficient water supply, b) hand-washing facilities conveniently located and with soap provided, c) closed door toilet facilities, d) sewage disposal, e) properly installed plumbing, f) floor drainage, g) garbage disposal, h) adequate lighting, and i) adequate ventilation. Respondents who were observed to have all the utilities mentioned were classified as having complete utilities, if one utility is missing respondent was classified as having incomplete utilities. Three of the SITPs who have complete utilities reported selling more than 500 MT of iodized salt in the previous year.

Most of the respondents (84-86%) who have incomplete utilities were lacking in floor drainage, installed plumbing and proper sewage disposal [Figure 1]. It was observed that most of those with no or incomplete utilities were the respondents who iodized their own harvested salt manually and within the premises of their own house, backyard, side of the salt beds or outside of the warehouses.

Production equipment for salt iodization

Most of the SITPs (63%) used plastic sprayer in spraying the fortificant solution during salt iodization [Table 17]. These sprayers are of two types: a) pressurized garden sprayer where a pump handle is pumped before spraying to introduce pressure into the container, and b) a plastic hand spray bottle. Both sprayers have nozzle spray setting that can be adjusted to control the liquid flow rate. Others (16%) used a compressor type sprayer that is usually attached to a salt iodization machine. A few used knapsack spray pump (13%) made of stainless steel. It is important to note that there were SITPs who used improvised sprayers such as perforated plastic bottle, plastic bottle with perforated bottle cap, water garden sprinkle or nozzle put on top of a bottle.

When the respondents who reported using pressurized sprayer whether it be manual or compressor operated, were asked, "how frequent does the iodine sprayer undergo routine maintenance?", a third (34%) reported maintenance was done every week [Table 17]. Others (23%) reported checking the sprayer before and/or after it was used. It is important to note that 25% of the SITPs do not conduct maintenance check on their sprayer.

One-fourth of the SITPs had iodization machines [Table 17]. The type of machine varied. Among those who had a machine (N=18), 9 had a continuous type blender (50%), 6 had a ribbon type blender (33.3%) and 2 used a cement mixer (11.1%) while the rest had improvised machines.

Among SITPs who uses iodization machines, 40% reported conducting maintenance check-up on their machine everyday, presumably because production is done everyday [Table 17]. Others (27%) reported doing maintenance checks before every production.

Overall, most SITPs who have sprayers and salt iodization machines have well-maintained equipment: the tools and machines are kept clean, and functional. It is usual that the person who last used them cleans the tools and materials before and after every use. In some instances, there are warehouse checkers, whose job is to maintain the equipment.

However, there are still some cases where tools and equipment are not maintained properly: some do not immediately clean their equipment after use, while some do not repair malfunctioning equipment.

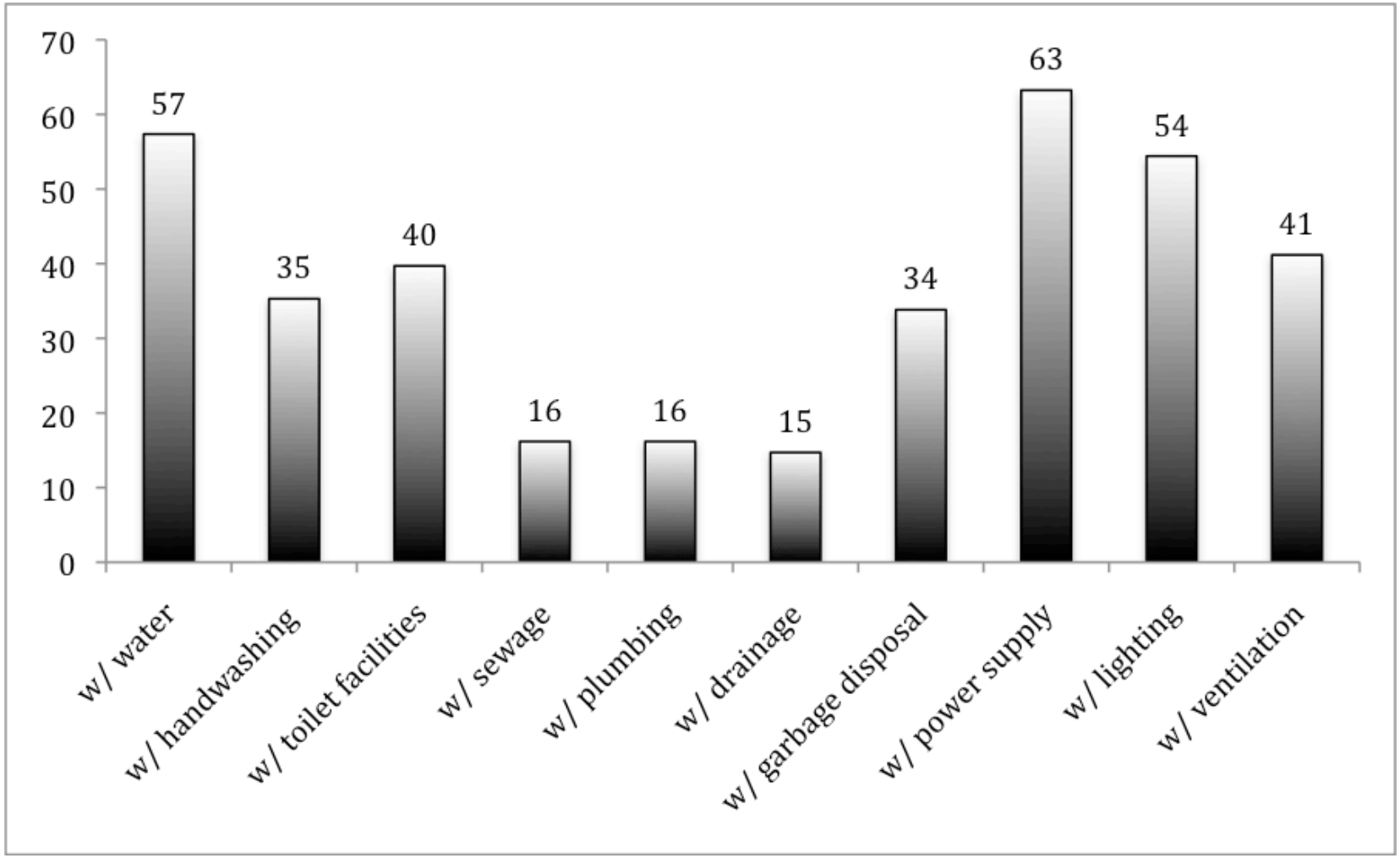

Figure 1. Proportion of salt importer/traders and producers with incomplete facilities by presence of the specified facilities needed in the production area.

Table 17. Frequency and percent distribution of salt importer/traders and producers by variables related to equipment used during salt iodization per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
Type of iodine sprayer used								
N	***45***		***20***		***6***		***71***	
Plastic, manual	35	77.8	9	45.0	1	16.7	45	63.4
Compressor-machine	5	11.1	2	10.0	4	66.7	11	15.5
Stainless steel, manual	3	6.7	5	25.0	1	16.7	9	12.7
Improvised	2	4.4	4	20.0	0	0.0	6	8.5
Frequency of maintenance of iodine sprayer								
N	***43***		***16***		***5***		***64***	
Every use	11	25.6	3	18.8	1	20.0	15	23.4
Every 30 minutes	1	2.3	1	6.3	0	0.0	2	3.1
Everyday	4	9.3	1	6.3	2	40.0	7	10.9
Every week	14	32.6	7	43.8	1	20.0	22	34.3
Once a month	1	2.3	0	0.0	1	20.0	2	3.1
No maintenance	12	27.9	4	25.0	0	0.0	16	25.0
Type of iodization machine used								
N	***48***		***19***		***6***		***73***	
No machine	41	85.4	14	73.7	0	0.0	55	75.3
Continuous-type	3	6.3	2	10.5	4	66.7	9	12.3
Ribbon blender	4	8.3	1	5.3	1	16.7	6	8.2
Cement mixer	0	0.0	2	10.5	0	0.0	2	2.7
Improvised	0	0.0	0	0.0	1	20.0	1	1.4
Frequency of maintenance of iodization machine								
N	***5***		***5***		***5***		***15***	
Every use	1	20.0	3	60.0	0	0.0	4	26.7
Everyday	2	40.0	2	40.0	2	40.0	6	40.0
Every week	1	20.02	0	0.0	2	40.0	3	20.0
Every month	1	20.0	0	0.0	1	20.0	2	13.3

Iodine level in iodized salt

To validate if the SITPs know the recommended iodine level in iodized salt they were asked what is their minimum and maximum targeted iodine level during salt iodization. Based on the FDA guidelines, the standard iodine content of iodized salt should be 20 to 70 ppm across distribution channel, whether in bulk or retail, imported or local. Only 31 (42%) out of the 74 respondents answered the question on the minimum iodine level [Table 18]. Among the 31 who responded, only 26% reported their minimum iodine level to be within the standard. Majority reported the minimum iodine level that was either below (6%) or above (68%) the standard.

On the other hand, 33 (45%) of the 74 respondents answered the question on the maximum iodine level of iodized salt [Table 18]. Among those who responded, 82% reported a maximum iodine level above the standard, between 75 to 100 ppm.

More than half of the respondents do not know the recommended iodine levels for iodized salt with majority overestimating both the minimum and maximum levels. Further, those who are familiar with the recommended levels seemed to know the old standards not the new standards that were released in 2007 and supposed to be disseminated to all salt manufacturers. If we compare the respondents' answer on the minimum and maximum iodine level to the old standards, 60 to 150 ppm iodine level at manufacturer's site, 70% of the respondents' minimum iodine level were within the standard while 91% of their maximum level were also within the standard. There was a significant increase in the proportion of producers with correct minimum and maximum target levels using the old standards.

To further validate the information on the iodine level, the iodine level of the fortificant solution being used by the SITPs during salt iodization was computed. Information on the weight of the fortificant used (potassium iodate) and quantity of non-iodized salt to be iodized was obtained. From this information, the iodine level during actual iodization was estimated, compared to the standard and classified to either within, below or above the standard [Table 18]. Only 55 (75%) of the 73 respondents who iodize their salt provided answers on both the amount of fortificant and the quantity of salt iodized. Most cannot give the actual quantity of salt to be iodized or that of the fortificant because they only estimate the quantity (i.e. 2 milk scoops or 2 spoons of fortificant in 4 or 5 liters of water). Among those who gave the information, 37% used a solution that would yield iodine levels below the 2007 standard [Figure 2a]. Most (61%) of the respondents whose iodine levels were below standard were from Luzon. When the computed iodine levels were compared to the old standard, only 1 respondent was iodizing above the maximum iodine level [Figure 2b]. Most respondents (85.5%) were using an iodate solution that will yield an iodine level below 70 ppm.

Table 18. Frequency and percent distribution of salt importer/traders and producers by variables related to iodine levels during salt iodization per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
Minimum target of iodine level in salt								
N	***2***		***7***		***2***		***31***	
Within recommended	5	22.7	2	28.6	1	50.0	8	25.8
Below recommended	1	4.6	1	14.3	0	0.0	2	6.5
Above recommended	16	72.7	4	57.1	1	50.0	21	67.7
Maximum target of iodine level in salt								
N	***22***		***7***		***2***		***33***	
Within recommended	3	13.6	1	14.3	0	0.0	4	12.1
Below recommended	1	4.6	1	14.3	0	0.0	2	6.1
Above recommended	18	81.8	5	71.4	2	100.0	27	81.8
Computed iodine level in salt								
N	***47***		***19***		***5***		***72***	
Within recommended	18	47.4	11	61.1	2	33.3	31	50.0
Below recommended	14	36.8	5	27.8	4	66.7	23	37.1
Above recommended	6	15.8	2	11.1	0	0.0	8	12.9

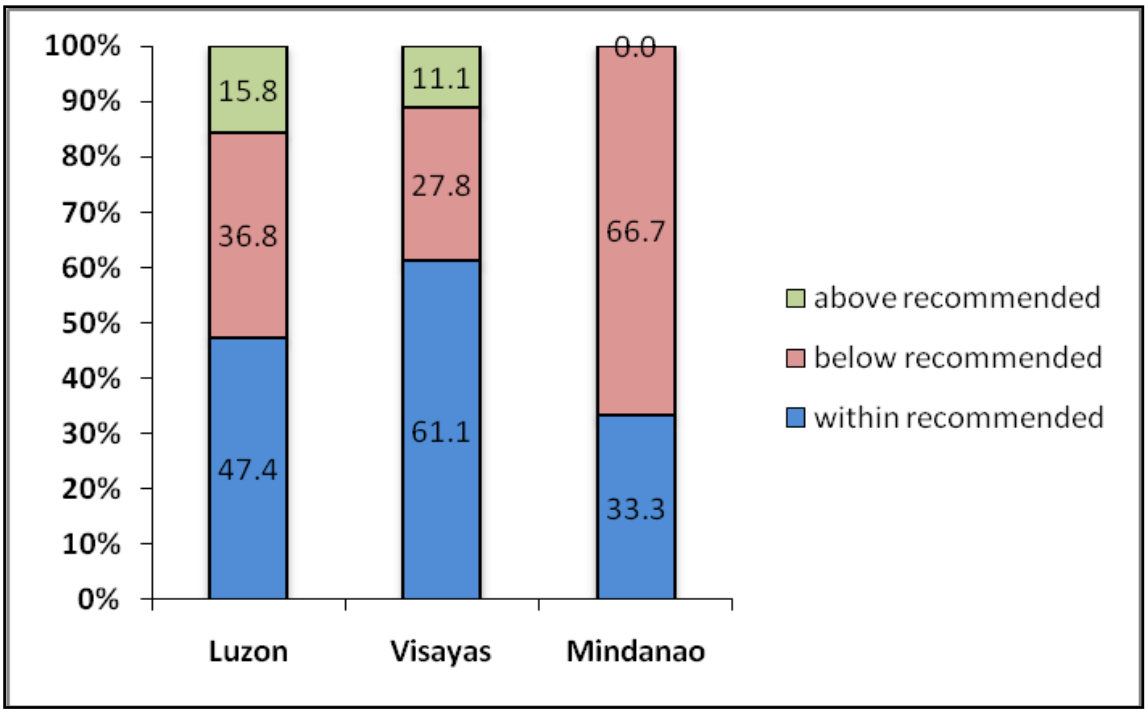

Figure 2a. Proportion of salt importer/traders and producers interviewed by classification of computed iodine levels (ppm) using the revised IRR.

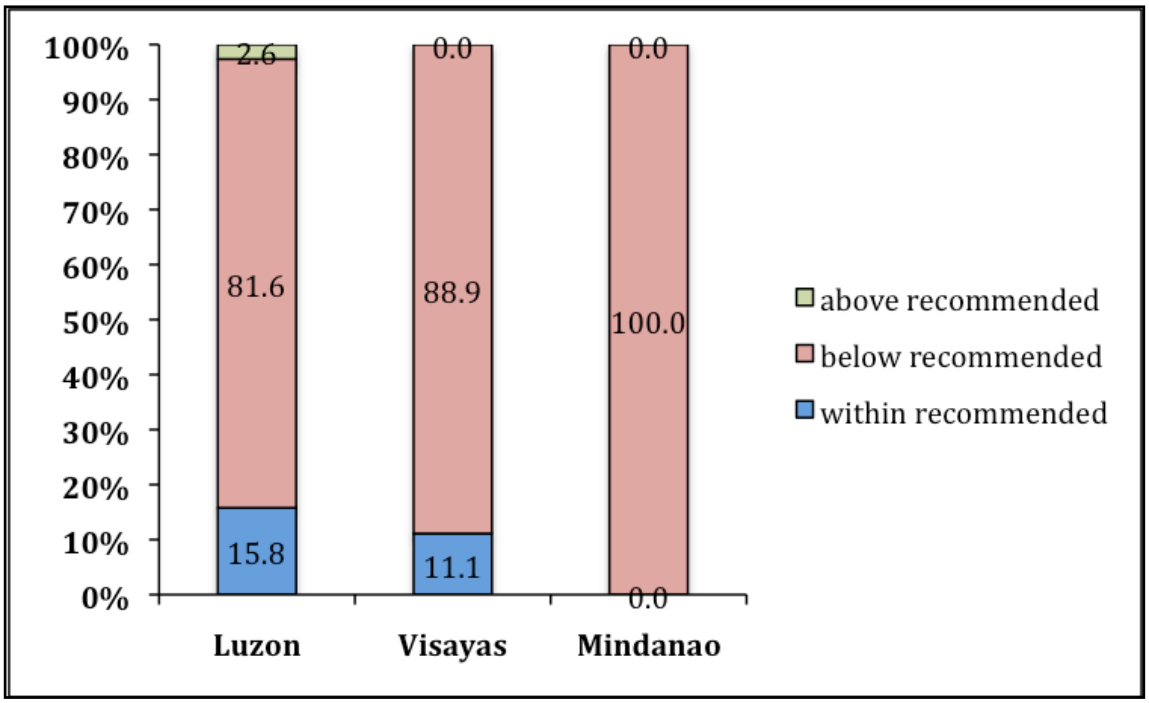

Figure 2b. Proportion of salt importer/traders and producers interviewed by classification of computed iodine levels (ppm) using the old IRR.

Salt iodization method

Similarities can be seen in the way SITPs approach salt iodization. First, most only iodize when it is needed, such as when there is a customer who wants to buy iodized salt. They also have similar sources of potassium iodate: government workers, large salt producers, and piecemeal from organizations. Inspection of raw materials for iodization is done visually, with most SITPs relying on an honor system with their suppliers.

There are two ways of salt iodization: manual iodization, and machine iodization [Table 19]. Most (73%) of the respondents iodize their salt manually. Among the respondents iodizing salt manually, 28 (53%) were able to give information on how much iodized salt were produced the previous year [Table 19]. Most of the respondents (64.3%) produced between 2 to 300 MT of iodized salt. Machine iodization is limited to large-scale SITPs.

Manual Salt Iodization

Manual salt iodization involves the use of a shovel, and a pressurized sprayer or a garden hose/sprinkler. In some instances, the SITPs also utilize their hands.

First, raw salt is spread on a flat surface, or poured into a wide container, such as a bucket. Then, potassium iodate is dissolved into a container of water. This iodate solution is then loaded into a pressurized sprayer or garden hose.

After this, the iodate solution is sprayed on the spread salt, and then mixing is done. A shovel is used to help aid in evening out the mix of raw salt and iodate solution. In some cases, mixing by hand is done.

Mixing time varies among respondents: some mix using the shovel as their guide (one instance describes it as three sets of shovel turns), while some set a time period to follow, such as five minutes. There are also some who use a test to determine the iodine content of the salt. In these cases, salt is continuously mixed until it satisfies the test (i.e. as one respondent explained, turns to the appropriate color).

Machine Salt Iodization

There are two types of iodization machines used by the respondents for salt iodization: some use a continuous-type iodization machine, while others use a batch-type machine (ribbon blender, cement mixer).

In the continuous-type iodization machine the salt is ground before being iodized. First, salt is poured directly into the machine. The machine has a conveyor belt type that takes the salt from process to process. In addition, the machine also continuously mixes the salt. After a set amount of time (this varies with respect to respondent), the iodate solution is sprayed to the mix.

The salt is then mixed continuously, to ensure even distribution of the iodate solution. As

with manual iodization, the time for the process depends on the respondents. There are some who set a time for it, while others also use a test to determine when to stop the mixing process.

On the other hand, in a batch type of iodization machine, coarse salt is grounded in a separate machine; the refined salt is then transferred to the iodizing machine for iodization.

There are also a few instances where the SITPs involve the iodization process in the actual production of the salt. In these cases, the respondents add the fortificant solution while they are cooking the salt during production. One respondent adds the fortificant solution while the salt is being cooked. Another respondent said that the fortificant solution is sprayed to the salt prior to grinding into finer salt.

Use of iodized salt

Almost all of the SITPs (96%) reported producing iodized salt for human or household consumption [Table 16]. The other uses of iodized salt were for food processing and for animal consumption. Bakeries, fish canning industries, biscuits manufacturers and animal feeds manufacturers were cited as regular clients.

Table 19. Frequency and percent distribution of salt importer/traders and producers by method of salt iodization and reported use of iodized salt per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	N	%	n	%	n	%
Method of salt iodization								
N	***47***		***20***		***6***		***73***	
Machine	8	17.0	7	25.0	5	83.3	20	27.4
Manual	39	83.0	13	65.0	1	16.7	53	72.6
Quantity of iodized salt produced using the manual method (MT)								
N	***18***		***9***		***1***		***28***	
<=2	2	11.1	2	22.2	0	0.0	4	14.3
>2 to <=300	12	66.7	6	66.7	0	0.0	18	64.3
>300 to <=2000	4	22.2	1	11.1	1	100.0	6	21.4
Use of iodized salt*								
N	***44***		***20***		***6***		***70***	
Human consumption	43	97.7	19	95.0	5	83.3	67	95.7
Food processing	6	13.6	2	10.0	1	16.7	9	12.9
Animal consumption	0	0.0	1	5.0	2	33.3	3	4.3

*Multiple responses

Quality Control

The method used by all of the respondents who conduct quality control on their iodized salt was spot testing using a Rapid Test Kit (RTK) usually given by the Sanitary Inspectors of the local government unit [Table 20]. The respondents were asked to show the RTK boxes. Among those who were able to show the complete set of the RTK, 76% were using RTKs past the expiration date indicated on the label of the box. One of the RTK shown had an expiration date of August 2005.

Spot testing is usually done by dropping the solution on the top of the heap of the iodized salt prior to packing. If the salt tested did not changed to the desired color, the heap will be sprayed again with the fortificant solution, mixed and tested again. The procedure is repeated until the desired color change on the tested salt is attained.

There were also those (28%) who do not conduct any quality control testing during iodization. They usually rely on the testing conducted by the Sanitary Inspectors in the market during market day or when they conduct occasional site visits because they were not provided their own test kits. Only 1 respondent, a large-scale SITP from Luzon, conducts an onsite test using the titration method.

Table 20. Frequency and percent distribution of salt importer/traders and producers by method used in testing iodized salt during production per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
N	***47***		***19***		***6***		***72***	
RTK	29	36.2	16	84.2	6	100.0	51	70.8
None	17	36.2	3	15.8	0	0.0	20	27.8
Titration & RTK	1	2.1	0	0.0	0	0.0	1	1.4

Packaging of iodized salt

Based on the guidelines for salt iodization, iodized salt should be packed in woven sacks made of polypropylene or clean unused jute bags or other non-porous material with a lining of high-density polyethylene film when packed as bulk. For retail packaging, plastic bags with a minimum of 0.03gauge thickness should be used.

The iodized salt was usually repacked in sack [Table 21]. The sacks used were either new, usually for large-scale producers, or second-hand/used sacks. Transparent plastic bags were also used in repacking iodized salt in smaller quantity, from as small as 250 g to as big as 1 kg per pack.

The label of iodized salt for commercial distribution should have the following mandatory information: a) product name (iodized salt) printed in bold capital letters, b) name and address of the manufacturer c) net weight, d) iodine compound or the iodine fortificant used, e) open date marking (best before/consume before), f) lot identification code, and g) storage instructions. Almost all respondents (99%) do not comply with this labeling requirement. Among those who are not complying, almost all (99%) do not have instructions on how to store the iodized salt [Figure 3]. The lot identification number and manufacturing date, which are both crucial in monitoring the stability of the iodine content and tracing the manufacturing batch of the iodized salt in question, were also not present among 97% and 85% of the respondents, respectively. Further, less than 30% have included the product name, manufacturer's name and net weight of the product in the labeling information.

Table 21. Frequency and percent distribution of salt importer/traders and producers by packaging material used when re/packing* iodized salt per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
N	***48***		***20***		***6***		***74***	
Sack	40	83.3	17	85.0	6	100.0	63	85.1
Plastic bag	10	20.8	3	15.0	1	16.7	14	18.9

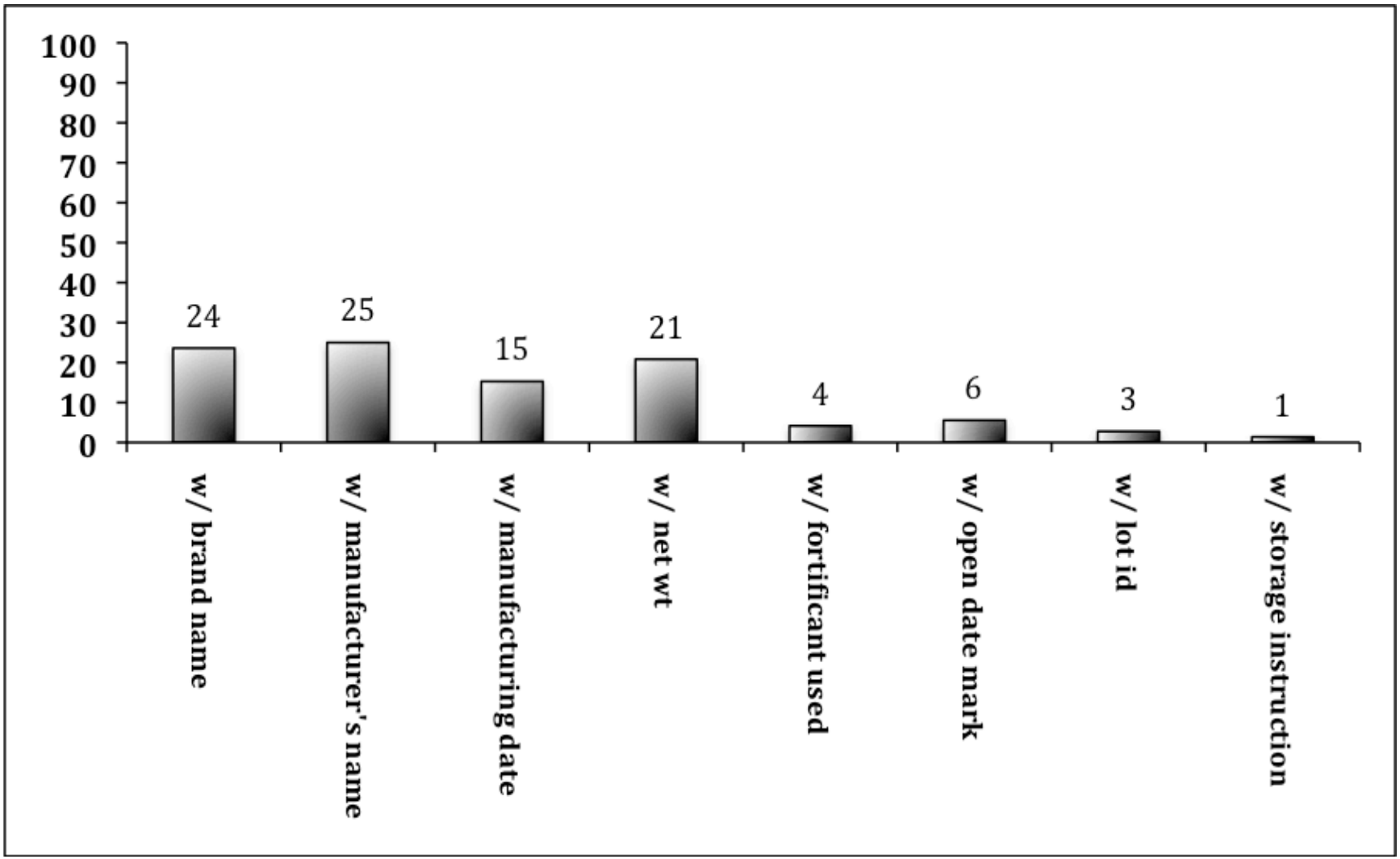

Figure 3. Proportion of non-compliant salt importer/traders and producers whose packaging has the required specified information.

Sanitation and safety system

The availability of protective clothing/uniform for the workers of the SITPs was observed. The observation of protective clothing was limited to the availability of hair caps, hairnets, apron, rubber boots and gloves for all workers. Only 5% of the respondents have complete available protective clothing for workers. Among those with incomplete protective clothing, rubber boots seemed to be the most commonly available, with 20% reportedly having it [Figure 4].

Only 15% reported to have first-aid kits available in the area in case of accidents or emergencies [Table 22].

Generally, fumigation of the premises was not regularly conducted in the production area. Those who claimed to conduct fumigation reportedly do it once a month or have done only the fumigation once.

Table 22. Frequency and percent distribution of salt importer/traders and producers by availability of first-aid facility per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
N	***48***		***20***		***6***		***74***	
Available	5	10.9	4	20.0	2	33.3	11	15.3

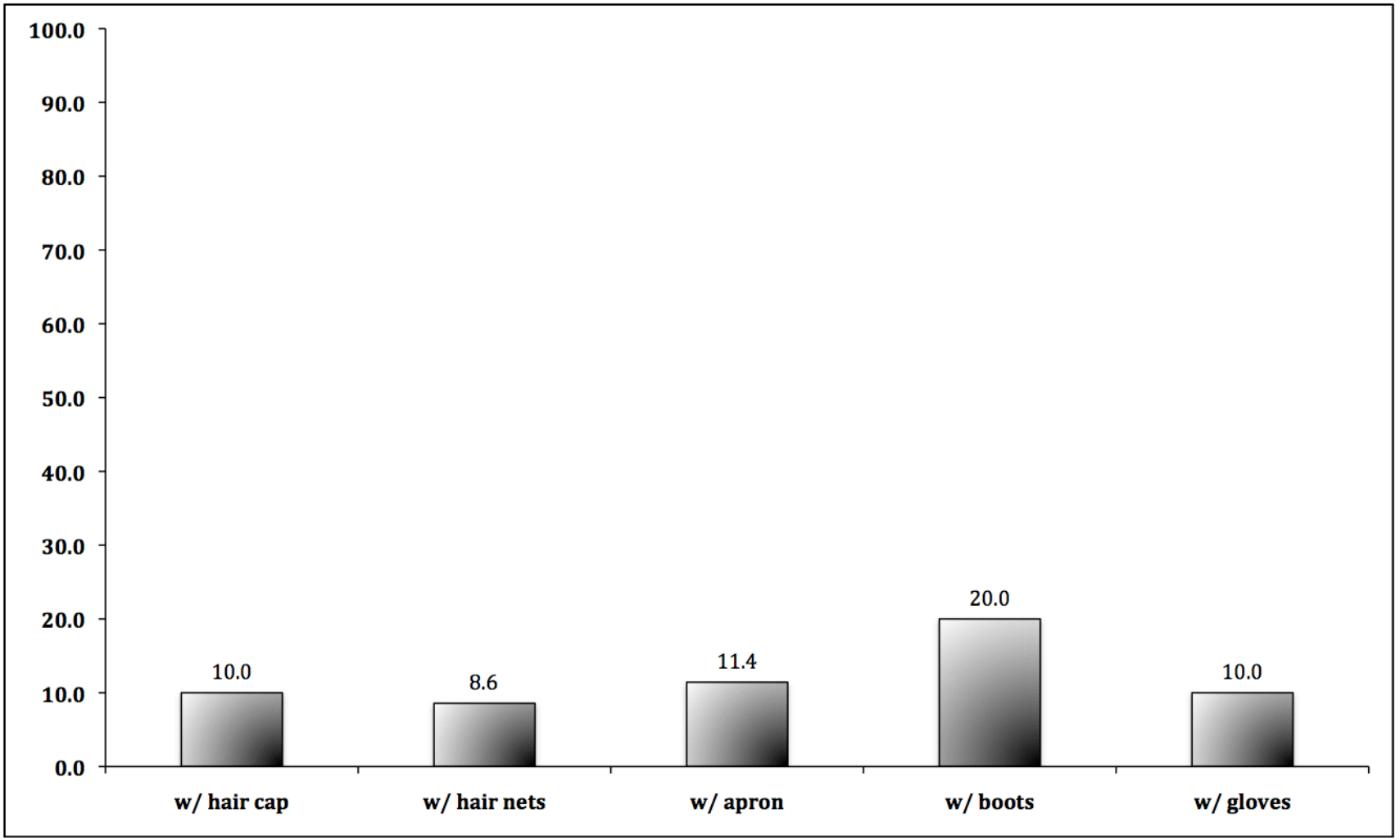

Figure 4. Proportion of salt importer/traders and producers who have the specific protective clothing for use during salt iodization

Storage, handling and distribution

Iodized salt were usually packed in sacks and stored in a warehouse. The packed salt would either be stacked horizontally, on top of one another, or stored upright. The packed iodized salt were stored elevated from the floor using a pallet. However, there are some who store iodized salt by dumping directly on the warehouse floor or packed in sack but not elevated from the floor. The floor is usually cemented or lined with plastic, woven bamboo mats, canvas or rice hull.

The storage area of the iodized salt usually has a roof either made of woven bamboo mats, aluminum or woven cogon grass. Storage areas without roofing material would usually cover the stored iodized salt with canvas.

There were respondents who do not store iodized salt because salt iodization is done only upon order of a buyer thus iodized salt is immediately delivered or picked-up.

Among respondents who reported storing iodized salt, only 41% followed the first-in, first-out (FIFO) system [Table 23]. Most (60%) respondents either retrieve the top-most or front-most stocks or whichever pack is nearby.

Thirteen percent (13%) claimed to have a system being followed when complaints about their products are received [Table 23]. The usual complaints of customers were high moisture content of the iodized salt or improper sealing of the packages. The product is retrieved and replaced. One respondent reported having assigned personnel in the market to monitor their products.

Table 23. Frequency and percent distribution of salt importer/traders and producers by variables related to storage, handling and distribution of iodized salt per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
Storage and retrieval system of iodized salt								
N	***25***		***14***		***4***		***44***	
First in, First out	10	40.0	3	21.4	5	100.0	18	40.9
Top/Front salt first	6	24.0	10	71.4	0	0.0	16	36.4
No system of storage/retrieval	9	36.0	1	7.1	0	0.0	10	22.7
Availability of product recall system								
N	***42***		***16***		***5***		***63***	
Available	5	11.9	2	12.5	1	20.0	8	12.7

Record Keeping

More than half of the respondents (55%) do not keep a record or any documentation related to the manufacturing of iodized salt [Table 24]. Those who claimed to have a system of record keeping (37%) would usually show either a notebook or a ledger to keep track of records such as results of machine maintenance, daily activities and others. Only a few have separate company forms such as Purchase Order, Delivery Receipt, Sales Records, Storage Records, Dispersion Records and the like.

Table 24. Frequency and percent distribution of salt importer/traders and producers by availability of forms for record keeping per island

Variable	Luzon		Visayas		Mindanao		Total	
	n	%	n	%	n	%	n	%
N	***45***		***19***		***6***		***70***	
Available	15	33.3	6	31.6	6	100.0	27	38.6

IV. Needs Assessment

The study also probed into the possible ways that assistance can be given to salt importer/traders and producers (SITPs) by asking an open-ended question: "What assistance do you need to help improve your business?". The purpose of this question in relation to the objective was to identify any needs relevant to quality control. The common themes among traders and producers are summarized.

Common concerns of both producers and traders are financial concerns, product quality, government assistance, and the iodization of salt.

Financial Matters

SITPs seek support for finances, such as funds for capital.

In the case of the salt importers/traders, funds are needed for the purchase or maintenance of new machines. The salt producers seek support primarily for upgrading equipment, as well as for the upkeep of old ones. In addition, capital is also needed for further training of the producers, and in one case, for the repair of salt beds after a typhoon.

Increasing sale of locally produced salt is also a main financial concern. In connection with this, some SITPs also stated the need to regulate, or eradicate salt importation.

The salt producers also raised the issue on the low selling price of local salt and if it can be regulated so that salt traders cannot dictate it.

Product Quality

The quality of local salt is also a main concern.

Salt importers/traders seek assistance in producing better quality salt, through innovative salt production strategies. Meanwhile, additional training, proper equipment and proper packaging practices are areas of interest to the salt producers. These practices will help monitor the quality of salt produced.

In addition, salt importers/traders also call for raising support for the local salt industry, which can be achieved through marketing assistance, as well as the regulation of imported salt.

Government Assistance

SITPs seek government assistance for price control, salt importation, and law implementation.

Price control seems to be a particularly thorny issue:

> *"Masyadong binabarat ng mga buyer ang presyo ng asin"* (The prices of salt are being lowered too much by the buyers)

Thus, respondents seek government intervention in the pricing of salt. Their aim is to standardize the prices of salt, so as to prevent losses.

For salt importation, the traders wish to regulate it, as it competes with the local salt market. Respondents feel that the government should take steps to show their support the local salt industry.

Law implementation, especially with regard to iodization, should be given due attention by the government.

In particular, the salt traders seek government assistance primarily for salt importation, as well as in abolishing the ASIN Law. There were also some comments for a revision of the ASIN Law from salt producers. However, no specific recommendations for revisions were given.

Iodization of Salt

With regard to the iodization of salt, generally, SITPs seem to have accepted the practice, with a few reservations. Specifically, the traders and producers need assistance for information, iodization equipment and law implementation.

First, they seek information on the process. As stated by one respondent:

> "Proper dissemination on how to use iodized salt, on what iodized salt is and its importance."

Salt producers also want access to training seminars on iodization. This way, the importance of salt iodization is properly explained to them.

Second, SITPs seek assistance in procuring the tools for iodization. As put by one respondent:

> *"If kailangan iodized yung asin, dapat magbigay daw ng machine; at magkaroon ng training."* (If the salt needs to be iodized, they should provide us with machines and with training.)

Lastly, the salt traders also wish for government assistance in implementing the laws on iodization. This is because in their experience, there are some who do not follow these rules, but still manage to stay in business:

> *"Mas maging mahigpit yung gov't kasi sila nagcocomply sila pero yung iba hindi, nakakapag-operate pa din sila."* (The government should be more strict, because some comply but there are others who do not, yet they

continue to operate.)

Specific Concerns of Producers

Salt producers also have concerns specific to the nature of their work. These are on equipment and labor costs.

Most producers cited the need of a proper storage facility, such as a warehouse, and for purchase of equipment such as water pumps. Some respondents also indicated the need for a boat, in hauling and storing salt.

The producers also raised issues on labor wages. In particular, the need for establishing a cooperative for the salt producers was a recurrent theme. Several respondents also said that salt laborers or tenants should be given equal rights as that of the landowners. This probably refers to the sharing system being practiced between the landowner and tenants on how much of the profit gained from selling salt is divided.

Summary of Concerns

In summary, the concerns of SITPs can be classified into four main issues: these are financial concerns, product quality concerns, the need for government assistance, and the iodization of salt.

Their main financial concern is for additional capital to purchase equipment for salt production and iodization. For product quality, support for acquiring new salt production strategies, through additional training and equipment, is needed. Government assistance is needed in law implementation, price control and salt importation. For the iodization of salt, assistance for information, iodization equipment and law implementation is needed.

IV. Mapping the location of Salt Importers/Traders and Producers using the Global Positioning System

Global Positioning System (GPS) mapping was conducted using either a GPSMAP 60CSx or GPSMAP 76Cx. The location of the salt farm of the salt producers or the warehouses, in the case of salt traders/importers, were recorded and stored in a map database by the FAs. The locations were captured automatically by pressing the "Mark" key on the device. Each location was labeled with either the company name or the salt farm owner whichever is applicable. Each map database was transferred and consolidated using BaseCamp version 3.0.2 software (Garmin Ltd., Kansas, USA).

The following map databases were prepared:

a. producers interviewed.GPX
- limited to salt producers who were interviewed

b. producers with destination.GPX
- limited to salt producers who were interviewed; includes track points of provinces where the salt produce are usually traded as reported by the respondents

c. traders interviewed.GPX
- limited to salt importers/traders who were interviewed

d. traders with destination.GPX
- limited to salt importers/traders who were interviewed; includes track points of provinces where the salt produce are usually traded as reported by the respondents

e. producers and traders interviewed.GPX
- limited to salt producers and importers/traders who were interviewed and not interviewed; the SITPs were distinguished as follow: red flag are salt producers who were not interviewed, blue flag are salt producers who were interviewed, red pin are salt importers/traders who were not interviewed, and blue pin are salt importers/traders who were interviewed.

f.. Luzon producers with destination.GPX
- limited to salt producers located in Luzon; includes track points of provinces where the salt produce are usually traded as reported by the respondents

g. Ilocos Norte, Ilocos Sur and La Union.GPX
- limited to salt producers located in Ilocos Norte, Ilocos Sur and La Union; includes track points of provinces where the salt produce are usually traded as reported by the respondents

h. Pangasinan producers..GPX
- limited to salt producers located in Occidental Mindoro; includes track points of provinces where the salt produce are usually traded as reported by the respondents

i. Bulacan producers.GPX

- limited to salt producers located in Bulacan; includes track points of provinces where the salt produce are usually traded as reported by the respondents

j. Mindoro producers.GPX

- limited to salt producers located in Occidental Mindoro; includes track points of provinces where the salt produce are usually traded as reported by the respondents

k. Visayas producers with destination.GPX

- limited to salt producers located in Visayas; includes track points of provinces where the salt produce are usually traded as reported by the respondents

l. Mindanao producers with destination.GPX

- limited to salt producers located in Mindanao; includes track points of provinces where the salt produce are usually traded as reported by the respondents

The maps can be viewed using the BaseCamp or the Google Earth software. Both software can be downloaded for free from their website and have versions available for both Macintosh and Windows operating system. Follow installation procedures after downloading the appropriate installer. The gpx files can be open either by double-clicking the file or by opening the file using your preferred installed software from the software interface window.

DISCUSSIONS AND RECOMMENDATIONS

The survey shows that there has been a change in the profile of the salt importers, traders and producers in the country when compared with the results of our last nationwide survey in the 1990s.

In the 2010 salt survey, we estimate that at least 30% of the salt producers who were included in the 1990 surveys have closed. This estimate does not include salt producers who were not included in our consolidated list. Thus, there is a possibility of underestimation. Several salt farms were either non-operational or have been converted to residential or commercial lots. The reasons for these are financial losses or the inability of the landowners to maintain the salt farm. For instance, several salt farms in Iloilo were either not operational or not fully operational because of damages in their salt beds caused by typhoons in the previous years. There were also other producers who have shifted to repacking iodized salt because it is less costly. Although there were several salt producers who have closed down they were also young players who have cropped-up in the salt industry. A third of the salt producers interviewed reported operating for less than or equal to 10 years.

Changes on how types of salt beds being used to produce solar salt were also evident. Salt producers from Occidental Mindoro, who previously were not using plastic sheets as salt beds, were now either shifting to using plastic sheets only or using both plastic sheets and broken ceramics. The shift to plastic sheets as salt beds is presumably to produce solar salt of better quality. Further, salt producers have commented that sourcing broken ceramics for use in repairing their salt beds is more expensive because ceramics has become less available.

In the production process of salt, the use of rock salt, a type of coarse salt that is of bigger granules, in producing fine grain salt through cooking has become more common. Traditionally, the concentrated brine cooked to produce fine salt came from the seawater that passed through sun-dried sand. Using this type of brine produces fine salt in small amount with a less white color. Cooking concentrated brine produced from dissolving coarse salt in seawater produced greater amount of fine salt that has whiter color compared with the fine salt produced using concentrated brine from seawater alone. The coarse salt used as an ingredient for fine salt is imported and is usually supplied by large-scale salt importers.

Status of registry of salt importers, traders and producers

It was stated in the Revised Implementing Rules and Regulations 2007 (IRR 2007) that a list of salt producers, importers and distributors in their respective territorial jurisdiction should be established and maintained by the LGU. A list of registered salt producers, importers and distributors in every province should be submitted to the FDA 6 months from the effectivity of the revised IRR. The list should reflect the following information: name and address of the company and/or owner/producer/importer or distributor; location of salt production site or warehouse; annual production capacity or importation; types of salt produce/traded; and distribution channels (i.e. direct consumers, traders, food manufacturers). The list should be updated annually. The revised IRR has been in effect since 2007.

In preparing for this survey, list of SITPs were requested from several government agencies, both local and national. Only a few were able to provide a listing. When these lists were checked and validated before and during the field survey, the team found the following findings: a) inclusion of several SITPs in the list even if the company has been closed for several years; b) misclassification, i.e. listed as producers but have presently shifted to repacking and retailing c) unavailability of required information that by law should be included in the database; d) non-inclusion of several SITPs in the list; e) inaccurate company names, i.e. company names have been changed but not reflected in the list.

This initial preparatory step revealed issues that might be worth looking into. Several LGUs do not have a list of SITPs in their jurisdiction and if they have a list, it is not regularly and accurately updated. It was also observed that LGU personnel are familiar with who are the SITPs operating in their jurisdiction, whether or not they have business permits and LTO and whether they are included or not in their official registry. Those without permits or LTO are freely operating. The team observed that there seems to be no fixed agency or department who is responsible for the salt industry, at least at the LGU level. The survey groups were referred to the DTI, Sanitary Inspectors, Municipal Agriculturist or Nutritionist-Dietitian depending on who has the list of SITPs.

Status of License to Operate

It is evident that almost all of the salt producers interviewed were not registered business entities nor do they have LTOs. It seemed to be an accepted practice among the industry and even among their governing LGUs. The reasons of the salt manufacturers on their failure to register their business and in turn avail of a LTO from the FDA have already been previously mentioned in this report.

Among the salt producers who either do not have or have failed to show their LTO during the interview, 72% were small-scale producers while among the salt importers/traders, half (52%) were small-scale importers/traders of iodized salt. Cross-tabulating for LTO status and category of computed iodine level (ppm) used during salt iodization showed

that 93.5% either do not have or have failed to show their LTO. Among the 93.5%, 36% were using an iodine solution that would yield an iodine level below the standard while 14% were using an iodine solution that would yield an iodine level above the standard.

One of the provisions of the ASIN Law is that all salt manufacturers who are iodizing salt should be registered for purposes of compliance and quality assurance and quality control monitoring. This would help the government regulatory body to check the iodized salt production and assure the consumers that the iodized salt they are buying and using are of standard quality. However, as shown in the survey, 95% of iodized salt manufacturers do not have their LTO and thus are not governed and sanctioned by the FDA. This is an opportunity for the salt manufacturers to produce, market and distribute iodized salt of low or poor quality.

Salt iodization process

Salt iodization using manual sprayers and manual mixing, either using bare hands or shovels, are much more common than using motor iodine sprayers and iodization machines. The use of motor iodine sprayers and iodization machines are limited to large-scale importers/traders who can afford the cost of maintenance and operation. There were a few respondents who have iodization machines that were left in storage for various reasons. The machines were either broken or costly to set up and use. In some instances, no one knows how to operate the machine, and in others the salt to be iodized is minimal.

Local salt producers and traders, in their need to comply with the requirement of trading only iodized salt and thus avoid confiscation of their product and other penalties, would iodize the salt manually. However, iodization did not follow specific procedures or guidelines. In general, the procedure is as follows: spray the fortificant solution on to the salt heap; mix the heap; if the SITP has RTK, drop RTK solution on the mixed salt; if tested salt turned purple, the iodized salt is pack in sacks. Both the amount of the sprayed fortificant solution and the amount of salt in the heap is unknown.

In addition to the unguided iodization technique, there were areas where the preparation of the fortificant solution is questionable. It was observed from several respondents in Luzon who iodize their own salt that different scoopers (milk scooper or plastic spoons) are used when adding potassium iodate in 4 or 5 liters of water kept in clear plastic bottle. Again, the weight of the added fortificant is not known.

The SITPs performing the practices above claimed to have attended training seminars conducted either by LGU officials or FDA on salt iodization. Few respondents were able to state correctly the recommended iodine level of iodized salt. Some would cite the old standard of iodine level in iodized salt.

Large-scale SITPs are also not immune to practices that will most likely result to poor quality iodized salt. When the fortification concentration was computed based on the amount of fortificant used and the quantity of salt to be iodized, 12 SITPs were using

iodine levels below the standard (2 of these were large-scale SITPs).

It was further observed that there were different non-standardized techniques of salt iodization among subsistence to small-scale producers. There was a producer who iodizes salt by adding the fortificant powder directly on the salt heap then manually mixes the heap. Another iodizes salt by dissolving the fortificant in a glass of water then manually sprinkles the fortificant solution. One producer sprinkles the fortificant powder to the concentrated brine while being cooked. Another respondent would spray the fortificant solution to coarse salt then grind the iodized salt into finer granules. The efforts of these producers to comply with the law are commendable but the absence of standard procedures makes it difficult to improve the quality of iodized salt available in the local market. These techniques pose a threat in the effort of authorities to improve the quality of locally produced iodized salt.

The situations above seem to indicate that whatever training received by the SITPs has not translated into proper practice. Many SITPs when probed on what they know about salt iodization gave unsure answers. They cannot remember specific benefits of iodized salt and the technical details of salt iodization. Both of these are crucial in sustaining the USI program and assuring at least the level of iodine in iodized salt is within the standards. Lack of information on the revised IRR of the ASIN Law was also evident. The new iodine standards seem to be familiar only among large-scale SITPs. Hands-on training seminars should be conducted especially among new players in the industry to orient and train them on salt iodization. Old SITPs players should still be included to check their extent of knowledge on the USI program and to retrain as needed. If possible, a manual on salt iodization should be provided.

No approved standardized guidelines on manual iodization are available, yet these are the most common methods used to iodize salt. This is probably the result of early advocacies in salt iodization where advocates would demonstrate manual salt iodization to show that iodization is simple, easy and possible notwithstanding the probability of producing inhomogeneous product. It might be better that instead of forcing the use and maintenance of iodization machines we can look into the possibility of developing a procedure that will make use of the simplest equipment (i.e. manual garden sprayer and shovel) during salt iodization. The procedure should look into how much fortificant solution should be sprayed on the salt heap, the amount of salt to be iodized, and the mixing frequency.

In addressing the inaccuracies in the amount of fortificant powder to be added during fortificant solution preparation, it is suggested that pre-packing the fortificant powder in amounts needed for each batch of iodization be done or to develop a standardized scooper to be made available to all.

Quality assurance /Quality control system in salt iodization

There are several issues concerning the quality assurance / quality control of iodized salt: 1) in plant iodine content testing, 2) iodized salt sampling, 3) storage and 4) packing of

iodized salt.

To check if iodized salt contains iodine that are meeting the standards, iodine content testing is required at the manufacturer's level. This can be done using a Rapid Test Kit (RTK), a WYD iodine checker or the standard titration method. Based on the survey, almost all of the SITPs who are producing or trading iodized salt are using RTKs. They either have their own RTKs on site or Sanitary Inspectors (SIs) check their salt using RTKs. However, the quality of the RTKs being used is in question. Upon inspection of the actual RTKs being used by the SITPs, it was observed that most RTKs are expired, as indicated in the labels. This observation does not include the RTKs being used by the SIs. It is important to note, however, that the SIs supplied almost all in-plant RTKs. When asked about using expired RTKs for testing, respondents said that they were assured that the kits can still be used since it is producing the desired effect (color change of iodized salt). Respondents also reasoned that they are still using the expired RTKs because they do not have an alternate testing method, laboratory testing is expensive and that they were not supplied new RTKs despite repeatedly requesting from the SIs.

Adding to this problem is the salt sampling method done (or not done) by the SITPs when testing the iodized salt. Ideally one to two spoonfuls of salt samples should be collected from random areas (i.e. top, middle, bottom) of the heap, each salt samples should be placed in a test plate and separately tested for presence of iodine by dropping one to two drops of test solution onto the salt sample. However, it was observed that most of the SITPs do not collect salt samples from the heap but instead drop the test solution directly on the top of the iodized salt heap, usually at one area only. This practice of sampling and testing does not assure that salt heap was completely nor homogeneously iodized. Further, keeping of iodized salt samples for each lot or batch of salt that was iodized for monitoring of iodine level is rarely done.

Ideally iodized salt should be packed in clean, unused woven sacks for bulk packing or in plastic bags for retail packing. Both packaging should conform to the prescribed labeling requirements in accordance with the BFAD Administrative Order No. 88-B series of 1988. However, these packaging and labeling requirements are rarely followed by the SITPs and if followed are limited to large-scale SITPs. However, even large-scale SITPs do not completely adhere to labeling requirements. The survey only encountered one SITP who was able to conform to all labeling requirements.

Guidelines further required that iodized salt should be kept palletized in a cool and dry storage area where it is protected from dust and other contaminants. Several SITPs do not have suitable warehouse construction allotted for storing iodized salt. There were SITPs who packed iodized salt in sacks, kept it in open yards, topped with either galvanized iron as roof or covered with canvass.

All of the above issues reflect the different levels of quality assurance/quality control of SITPs regardless of classification.

As included in the guideline, compliance by SITPs on the standards set for iodized salt

should be externally monitored by the government sector through FDA and the LGU. External monitoring includes checking of the quality assurance and quality control system and practices and the collection of iodized salt samples for confirmatory testing of iodine content. External monitoring should be done at least once a year. The purpose of external monitoring is to assess the compliance of the SITPs to the standards specified in the guidelines. However, several respondents when asked if visited by the FDA or LGU would reply negatively. Some would report that they were visited but not given any feedback on the results of the visit of the external monitoring team and thus assumed that they are meeting the standards because they are allowed to operate.

Needs assessment

The needs of the SITPs can be categorized in two: technical training and capital investment. Technical training includes training on salt iodization, quality testing and product marketing. Capital investment refers to both financial and logistical such as equipment and materials for salt iodization.

Ideally, these needs were anticipated, addressed and made available to the salt industry when the government approved the law. Included in the revised IRR of the ASIN Law is a section on the role of different government agencies in support of the iodization program. For instance, the Department of Science and Technology shall provide technical assistance in the design, maintenance and operation of salt iodization machines; the Technology and Livelihood Resource Center shall provide funding assistance to qualified small producers and develop a program of training entrepreneurs in setting up micro/cottage/small business enterprises; the Department of Trade and Industry shall assist and support local salt producers in upgrading their production technologies by helping them obtain soft loans and financial assistance for the procurement of salt iodization machines, packaging equipment, technology and fortificants. However, in reality, not all in the salt industry are knowledgeable of the assistance that should be provided to them nor are they familiar with what agencies should provide these. There is a need first to establish if each agency is informed of their roles and whether there are operational guidelines to implement their roles. It would also be very useful if in the last 10 years accomplishments related to the USI program have been documented and reported by the respective agencies. This evaluation would provide a clear picture on the respective agencies' involvement in the USI program, any duplication of functions, and the resources and coordination needed for the agencies' to fulfill their roles After this evaluation, the salt industry must be informed in a formal gathering the concrete assistance available to them.

Results of the survey could be summed up into the following: the current actual operational practices of the salt manufacturers; the quality of information known in relation to salt iodization; the coping mechanisms done in the effort to produce iodized salt; the assistance needed; and the status of the support mechanism supposedly implemented by the different government agencies to the SITPs. The information gathered in each of these aspects could be used primarily as a guide in the development of

advocacy program among SITPs. The survey is also an indirect evaluation of the effectiveness of the implementation of the USI program in the country. Thus, results of the survey might also be used as a support to a critical assessment of the USI program implementation.

REFERENCES

Congress of the Philippines (1995). Republic Act NO. 8172: An Act Promoting Salt Iodization Nationwide and Related Purposes (ASIN Law) and its Implementing Rules and Regulations S. no. 1122 H. no. 45. Manila: Philippines

Food and Nutrition Research Institute, (2001). Philippine Nutrition Facts and Figures. United Nations Children's Fund

Food and Nutrition Research Institute, (2006). Philippine Nutrition Facts and Figures 2003. Food and Nutrition Research Institute-Department of Science and Technology.

Food and Nutrition Research Institute, (2010). The Seventh National Nutrition Survey: Philippines, 2008..Food and Nutrition Research Institute-Department of Science and Technology.

Maramag, C. C., Tengco, L. W., Rayco-Solon, P., & Solon, F. S. (2007). Stability of iodine in iodized aged salt and iodized newly harvested salt exposed in simulated market conditions. Food and Nutrition Bulletin, 28, 412-418.

National Nutrition Governing Board (2007). Revised Implementing Rules and Regulations of Republic Act No. 8172 "An Act Promoting Salt Iodization Nationwide and for Related Purposes".

Solon, F. S., Nano, T.C., & Sanchez, L. E. (1994). The Salt Industry in Pangasinan, Bulacan and Occidental Mindoro.

Solon, F. S., Nano, T. C., Aran, M. V. J., Limson, M. E. R. P., Isleta, M. F., & Sanchez, L. E. (1994). The Salt Industry in Visayas and Mindanao.

Solon, F. S., Nano, T. C., Aran, M. V. J., & Wambangco, L. S. (1997). Quality assurance system if a salt iodization plant in the Philippines: A case study.

Solon, F. S., Nano, T. C., & Sanchez, L. E. (1995). The Salt Industry in the Provinces of Cavite, Ilocos Sur and Zambales.

Solon, F. S., Sanchez-Fermin, L., & Pastores, M. C. F. (1998). Stability of iodine in iodized salt sold through the "takal" system at Amadeo, Cavite.

Solon, F. S., Sanchez-Fermin, L., Pastores, M. C. F., & Cristobal, C. C. (1999). A Survey of Salt Retailers in Luzon, Visayas and Mindanao.

WHO/UNICEF/ICCIDD (2007) Assessment of iodine deficiency disorders and monitoring their elimination: a guide for programme managers. 3rd ed. Geneva: Switzerland.

LIST OF ANNEXES

1 Salt producer interview schedule

2 Salt importer/trader interview schedule

3 Quality assurance/Quality control interview schedule

4 Consent/Confidentiality letter

5 Detailed results of the survey among salt producers

6 Methods of salt production

7 Detailed results of the survey among salt importers/traders

8 Detailed results of survey on Quality Assurance / Quality Control practices on salt iodization

Annex 1. Salt producer interview schedule

Salt Producer Interview Schedule
A Survey of Salt Importers, Producers and Traders in the Philippines: an Evaluation of Internal and External Quality Assurance and Control

IDENTIFICATION: _____

Interviewer: _____ Interview Date : __ __ / __ __/ __ __

A. COMPANY PROFILE

	CODE
Name of company (Pangalan ng kumpanya): _____	COMPANY
Name of owner: _____	OWNER
Respondent's name: _____	RESPOND
Designation: _____	DESIGN
Office address: _____	OFFICE
_____	
Telephone no: _____ _____ _____	OFCTEL
Website: _____	WEBSITE
Email address: _____	EMAIL
Site address: _____	SITE
_____	
Telephone no: _____ _____ _____	SITETEL
Start of operation: _____ Years operational: _____	START
	YEARS
Registered Company: ☐ YES ☐ NO	REGISTER
Registration No: _____ Agency: _____	REGNO1
Registration No: _____ Agency: _____	REGNO2
Licensed to Operate: ☐ YES ☐ NO	LICENSE
License No: _____	LICNO

EMPLOYEE PROFILE

1. Total number of employees including company head/owner: _____

2. Indicate total number of employees per category then ask for the information below:

Executive: _____

Position	Employed	Qualification	Employment duration
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Remarks on Employment Profile

_____

_____

_____

_____

_____

_____

_____

CODE

EMPLOYEE

POSITION NEEDED

EMPLOYED

QLFICATION

DURATION

B. OPERATIONAL INFORMATION FOR RAW SALT PRODUCTION

PRODUCTION	CODE
1. What method of raw salt production is/are used by the producer?	PROCESS
1 Solar evaporation	
2 Grainer evaporation process (open pan using direct heat)	
3 Vacuum evaporation process (closed pan)	
4 Others: _____	
2. What is the land area for salt production: _____	AREAPROD
3. How many salt beds do you have and what are their sizes?	BEDQNTY
Quantity Size Capacity	BEDSIZE
_____ _____ _____	BEDCAP
_____ _____ _____	
_____ _____ _____	
4. What are the types of salt beds used? _____	BEDTYPE
1 Bricks 4 Plastic sheets	
2 Black stones 5 Bamboo	
3 Cement 6 Others: _____	
5. When is your usual production period for raw salt?	PRODTIME
From To	
_____ _____	
_____ _____	
6. How often do you harvest raw salt during peak season?	FREQHARVEST
1 Daily 3 Weekly	
2 Every two days 4 Others: _____	
7. What type of raw salt is/are produced by the company?	SALTTYPE
1 Coarse (>10mm) 3 Both	
2 Fine (<10mm) 4 Others: _____	
8. How much was your total raw salt production last year?	QNTYPROD
Quantity Unit of Measurement	
_____ _____	
_____ _____	
9. What are the uses of the raw salt produced?	SALTUSE
1 Human consumption 3 Animal consumption	
2 Food processing 4 Others: _____	
10. How much was your total raw salt production last year per use of raw salt?	HCPROD
Quantity Unit of measurement	FOODPROD
Human consumption _____ _____	ANIMALPROD
Food processing _____ _____	
Animal consumption _____ _____	
Others: _____ _____ _____	

RAW SALT PRODUCTION (to be accomplished in detail)

Source of raw material/brine: _____

Preparatory procedure (describe the materials needed, its usage, indicate the time lines):

_____

_____

_____

_____

_____

_____

Drying procedure (describe the materials needed, its usage, indicate the time lines):

_____

_____

_____

_____

_____

_____

_____

_____

Sharing system, if applicable

_____

_____

_____

_____

_____

STORAGE	**CODE**
1. Is there an available warehouse for storage of raw salt?	WAREHS
☐ YES, go to no 2 ☐ NO, go to no. 4	
2. What is the storage capacity of the warehouse?	WARESTORE
Quantity _____ Unit of Measurement _____	
_____ _____	
3. Do you store ALL the raw salt inside the warehouse?	STORE
☐ YES, go to no. 6 ☐ NO, go to no. 4	
4. If no, where are the raw salt stored aside from the warehouse?	OTHERSTORE
_____	
_____	
5. Describe the other areas where raw salt are stored:	
With roofing ☐ YES ☐ NO	ROOF
With walls ☐ YES ☐ NO	WALLS
With flooring ☐ YES ☐ NO	FLOOR
With drainage ☐ YES ☐ NO	DRAINAGE
6. What storage container/s is/are used for storing raw salt?	STOREPACK
1 Dumped directly on floor 6 Plastic, LDPE	
2 Sack, woven HDPE (new) 7 Sack with plastic lining	
3 Sack, woven HDPE (second hand) 8 Woven basket	
4 Sack, woven PP (new) 9 Sold immediately after harvest	
5 Sack, woven PP (second hand) 10 Others: _____	

PACKAGING	**CODE**
1. Do you pack/repack the raw salt before selling?	
☐ YES, go to no 2 ☐ NO, go to no. 4	PACK
2. If yes, what packaging material is/are used in packing/repacking the raw salt before selling?	SELLPACK
1 Sack, woven HDPE (new) 5 Plastic	
2 Sack, woven HDPE (second hand) 6 Sack with plastic lining	
3 Sack, PP (new) 7 Woven basket	
4 Sack, PP (second hand) 8 Others: _____	
3. What sizes of packing are available?	SELLSIZE
1 40 kgs 3 54 kgs	
2 50 kgs 4 Others: _____	
4. What packaging material is/are used by the buyer when buying the raw salt?	BUYPACK
1 None/dumped on transportation 6 Plastic, LDPE	
2 Sack, woven HDPE (new) 7 Sack with plastic lining	
3 Sack, woven HDPE (second hand) 8 Woven basket	
4 Sack, PP (new) 9 Others: _____	
5 Sack, PP (second hand)	
3. What sizes of packing are available?	BUYSIZE
1 40 kgs 3 54 kgs	
2 50 kgs 4 Others: _____	
5. Does the packaging contains the following information:	
Company name ☐ YES ☐ NO	RAWNAME
Address/Contact nos. ☐ YES ☐ NO	RAWADD
Manufacturing date ☐ YES ☐ NO	RAWMNFC
6. Were samples of the packaging shown?	
☐ YES ☐ NO	VERIFYPACK

MARKETING				**CODE**
1. How much raw salt was sold last year?				
		Quantity	Unit of Measurement	HCSOLD
	Human consumption	_____	_____	FOODSOLD
	Food processing	_____	_____	ANIMALSOLD
	Animal consumption	_____	_____	
	Others: _____	_____	_____	
2. Selling price per bag:				COMHIGHPRC09
COMMERCIAL	Unit of Measurement	Year 2009	Year 2010	COMLOWPRC09
Highest	_____	_____	_____	COMCURPRC09
Lowest	_____	_____	_____	COMHIGHPRC10
Current	_____	_____	_____	COMLOWPRC10
				COMCURPRC10
INDUSTRIAL	Unit of Measurement	Year 2009	Year 2010	INDLOWPRC09
Highest	_____	_____	_____	INDCURPRC09
Lowest	_____	_____	_____	INDHIGHPRC10
Current	_____	_____	_____	INDLOWPRC10
				INDCURPRC10

DISTRIBUTION	**CODE**
1. What type of transportation is/are used for delivery of raw salt?	TRANSPORT
1 Truck 4 Boat/Banca/Ferry 2 Jeep/Van/Pick-up 5 Others, _____ 3 Tricycle/Pedicab	
2. What is the usual capacity of each mode of transportation?	TRANSCAP
_____ Truck _____ Boat/Banca/Ferry _____ Jeep/Van/Pick-up _____ Others,_____ _____ Tricycle/Pedicab	
3. Who do you usually sell to?	BUYERS
Name Address Quantity Frequency _____	
4. Where is the usual destination of the raw salt sold?	DESTINATION
1 Same place where salt was produced 2 Metro Manila 3 Luzon, give specific area _____ 4 Visayas,give specific area _____ 5 Mindanao, give specific area _____	

C. SALT IODIZATION PRACTICES

	CODE
1. Do you iodize raw salt?	
☐ YES, go to no. 2 ☐ NO, go to no 6.	IODIZED
2. What year did the company start iodizing raw salt? _____	YEARIS
3. Are you still iodizing raw salt?	
☐ YES, go to no. 4 ☐ NO, go to no. 5	PRODIS
4. If yes, how long has the company been iodizing raw salt? _____	LONGIS
Ask the reason if there is gap between the start year of iodization and current year. Write reason below.	
_____	
_____	
_____	
5. If no, what year did you stop iodizing raw salt? _____	LENGTH
6. If no, who does the iodization of the raw salt?	OUTSIDEIS
Name Address	
_____ _____	
_____ _____	
_____ _____	
_____ _____	

Proceed to QA/QC Questionnaire if presently iodizing raw salt or selling iodized salt. If not iodizing raw salt or selling iodized salt, proceed to the NEEDS ASSESSMENT question below.

NEEDS ASSESSMENT	**CODE**
1. What assistance do you need to help improve your business?	ASSISTANCE
(ie, assistance with marketing, training acquisition, financing consultancy and product development)	
_____	
_____	
_____	

---------- END OF INTERVIEW ----------

Annex 2. Salt importer/trader interview schedule

Salt Importer/Trader Interview Schedule
A Survey of Salt Importers, Producers and Traders in the Philippines: an Evaluation of Internal and External Quality Assurance and Control

IDENTIFICATION: _____

Interviewer: _____ Interview Date : __ __ / __ __ / __ __

A. COMPANY PROFILE

	CODE
Name of company: _____	COMPANY
Name of owner: _____	OWNER
Respondent's name: _____	RESPOND
Designation: _____	DESIGN
Office address: _____	OFFICE
_____	
Telephone no: _____ _____ _____	OFCTEL
Website: _____	WEBSITE
Email address: _____	EMAIL
Site address: _____	SITE
_____	
Telephone no: _____ _____ _____	SITETEL
Start of operation: _____ Years operational: _____	START
	YEARS
Registered Company: ☐ YES ☐ NO	REGISTER
Registration No: _____ Agency: _____	REGNO1
Registration No: _____ Agency: _____	REGNO2
Licensed to Operate: ☐ YES ☐ NO	LICENSE
License No: _____	LICNO

EMPLOYEE PROFILE

1. Total number of employees including company head/owner: _____

2. Indicate total number of employees per category then ask for the information below:

Executive: _____

Position	Employed	Qualification	Employment duration
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Remarks on Employment Profile

_____

_____

_____

_____

_____

_____

_____

CODE

EMPLOYEE

POSITION NEEDED

EMPLOYED

QLFICATION

DURATION

B. OPERATIONAL INFORMATION OF SALT IMPORTER/TRADER

PURCHASING — **CODE**

1. What type of salt do you purchase? — TYPEBUY

1 Raw
2 Iodized
3 Both: _____

2. Where do you purchase your salt?

	RAW	IODIZED	
			SOURCERAW
1	India	1 India	SOURCEIS
2	China	2 China	
3	Philippines _____	3 Philippines _____	
4	Others_____	4 Others: _____	

3. Form of salt purchased:

	RAW	IODIZED	
			FORMRAW
1	Fine	1 Fine	FORMIS
2	Coarse	2 Coarse	
3	Rock	3 Rock	
4	Others _____	4 Others _____	

4. How often do you purchase salt?

	RAW	IODIZED	
			FREQRAW
1	Weekly	1 Weekly	FREQIS
2	Monthly	2 Monthly	
3	Quarterly	3 Quarterly	
4	Others _____	4 Others _____	

5. What are the uses of the purchased salt?

	RAW	IODIZED	
			USERAW
1	Human consumption	1 Human consumption	USEIS
2	Food processing	2 Food processing	
3	Animal consumption	3 Animal consumption	
4	Others_____	4 Others: _____	

6. What was your total salt purchases last year per use of purchased salt:

	Quantity	Unit of Measurement	
RAW			
Human consumption	_____	_____	HCQNTYRAW
Food processing	_____	_____	FOODQNTYRAW
Animal consumption	_____	_____	ANIQNTYRAW
Others: _____	_____	_____	
IODIZED			
Human consumption	_____	_____	HCQNTYIS
Food processing	_____	_____	FOODQNTYIS
Animal consumption	_____	_____	ANIQNTYIS
Others: _____	_____	_____	

STORAGE	**CODE**
1. Is there an available warehouse for storage of purchased salt? ☐ YES, go to no 2 ☐ NO, go to no. 4	WAREHS
2. What is the storage capacity of the warehouse? Quantity / Unit of Measurement _____ _____ _____ _____	WAREHSCAP
3. Do you store ALL the purchased salt inside the warehouse? ☐ YES, go to no. 6 ☐ NO, go to no. 4	STORE
4. If no, where are the salt stored aside from the warehouse? _____ _____	OTHERSTORE
5. Describe the other areas where salt are stored: With roofing ☐ YES ☐ NO With walls ☐ YES ☐ NO With flooring ☐ YES ☐ NO With drainage ☐ YES ☐ NO	ROOF WALLS FLOOR DRAINAGE
6. What storage container/s is/are used for storing salt?	

	RAW		IODIZED	CODE
				STORERAW
1	Dumped directly on floor/grounds	1	Dumped directly on floor/grounds	STOREIS
2	Sack, woven HDPE (new)	2	Sack, woven HDPE (new)	
3	Sack, woven HDPE (second hand)	3	Sack, woven HDPE (second hand)	
4	Sack, woven PP (new)	4	Sack, woven PP (new)	
5	Sack, woven PP (second hand)	5	Sack, woven PP (second hand)	
6	Plastic	6	Plastic	
7	Sack w/ plastic lining	7	Sack with plastic lining	
8	Woven basket	8	Woven basket	
9	Others _____	9	Others: _____	

PACKAGING | **CODE**

1. Do you pack/repack the salt before selling?

RAW		IODIZED		CODE
☐	YES, go to no 2	☐	NO, go to no. 4	PACK

2. If yes, what packaging material is/are used in packing/repacking the salt before selling?

	RAW		IODIZED	CODE
				REPACKRAW
1	Sack, woven HDPE (new)	1	Sack, woven HDPE (new)	REPACKIS
2	Sack, woven HDPE (second hand)	2	Sack, woven HDPE (second hand)	
3	Sack, woven PP (new)	3	Sack, woven PP (new)	
4	Sack, woven PP (second hand)	4	Sack, woven PP (second hand)	
5	Plastic, LDPE	5	Plastic, LDPE	
6	Sack with plastic lining	6	Sack with plastic lining	
7	Woven basket	7	Woven basket	
8	Others: _____	8	Others: _____	

3. What sizes of packing are available?

RAW			IODIZED			CODE
						PACKRAW
Unit of measurement	Quantity	Frequency	Unit of measurement	Quantity	Frequency	PACKIS
_____	_____	_____	_____	_____	_____	
_____	_____	_____	_____	_____	_____	
_____	_____	_____	_____	_____	_____	

4. What packaging material is/are used by the buyer when buying the salt?

	RAW		IODIZED	CODE
				BUYPACKRAW
1	None/dumped on transportation	1	None/dumped on transportation	BUYPACKIS
2	Sack, woven HDPE (new)	2	Sack, woven HDPE (new)	
3	Sack, woven HDPE (second hand)	3	Sack, woven HDPE (second hand)	
4	Sack, woven PP (new)	4	Sack, woven PP (new)	
5	Sack, woven PP (second hand)	5	Sack, woven PP (second hand)	
6	Plastic, LDPE	6	Plastic, LDPE	
7	Sack with plastic lining	7	Sack with plastic lining	
8	Woven basket	8	Woven basket	
9	Others: _____	9	Others: _____	

5. Does the packaging contain the following information:

					CODE
RAW					
Company name	☐	YES	☐	NO	RAWNAME
Address/Contact nos.	☐	YES	☐	NO	RAWADD
Manufacturing date	☐	YES	☐	NO	RAWMNFC
IODIZED					
Company name	☐	YES	☐	NO	ISNAME
Address/Contact nos.	☐	YES	☐	NO	ISADD
Manufacturing date	☐	YES	☐	NO	ISMNFC

MARKETING				**CODE**
1. Quantity of purchased salt sold last year:				
RAW		Quantity	Unit of Measurement	
Human consumption		_____	_____	SOLDRAWHC
Food processing		_____	_____	SOLDRAWFOOD
Animal consumption		_____	_____	SOLDRAWANIMAL
Others: _____		_____	_____	
IODIZED				
Human consumption		_____	_____	SOLDISHC
Food processing		_____	_____	SOLDISFOOD
Animal consumption		_____	_____	SOLDISANIMAL
Others: _____		_____	_____	
2. Selling price per bag/pack:				
RAW				HIGHPRCRAW
COMMERCIAL	Unit of Measurement	Year 2009	Year 2010	LOWPRICERAW
Highest	_____	_____	_____	CURPRICERAW
Lowest	_____	_____	_____	
Current	_____	_____	_____	
INDUSTRIAL	Unit of Measurement	Year 2009	Year 2010	
Highest	_____	_____	_____	
Lowest	_____	_____	_____	
Current	_____	_____	_____	
IODIZED				
	Unit of Measurement	Year 2009	Year 2010	HIGHPRICEIS
Highest	_____	_____	_____	LOWPRICEIS
Lowest	_____	_____	_____	CURPRICEIS
Current	_____	_____	_____	
	Unit of Measurement	Year 2009	Year 2010	
Highest	_____	_____	_____	
Lowest	_____	_____	_____	
Current	_____	_____	_____	
	Unit of Measurement	Year 2009	Year 2010	
Highest	_____	_____	_____	
Lowest	_____	_____	_____	
Current	_____	_____	_____	

DISTRIBUTION				**CODE**
1. What type of transportation is/are used for delivery of salt?				
	RAW		IODIZED	TRANSPORTRAW
	1 Truck		1 Truck	TRANSPORTIS
	2 Jeep/Van/Pick-up		2 Jeep/Van/Pick-up	
	3 Tricycle/Pedicab		3 Tricycle/Pedicab	
	4 Boat/Banca/Ferry		4 Boat/Banca/Ferry	
	5 Others_____		5 Others_____	
2. What is the usual capacity of each mode of transportation?				
RAW			IODIZED	TRANSCAPRAW
_____	Truck	_____	Truck	TRANSCAPIS
_____	Jeep/Van/Pick-up	_____	Jeep/Van/Pick-up	
_____	Tricycle/Pedicab	_____	Tricycle/Pedicab	
_____	Boat/Banca/Ferry	_____	Boat/Banca/Ferry	
3. To whom do you usually sell to?				BUYERSRAW
Name	Address	Quantity	Frequency	
_____	_____	_____	_____	
4. Where is the usual destination of the salt sold?				
RAW				DESTINRAW
1 Same place where salt was produced				
2 Metro Manila				
3 Luzon, give specific area _____				
4 Visayas,give specific area _____				
5 Mindanao, give specific area _____				
IODIZED				DESTINIS
1 Same place where salt was produced				
2 Metro Manila				
3 Luzon, give specific area _____				
4 Visayas,give specific area _____				
5 Mindanao, give specific area _____				

C. SALT IODIZATION PRACTICES

	CODE
1. Do you iodize the purchased raw salt?	
☐ YES, go to no. 2 ☐ NO, go to no 6	IODIZED
2. What year did the company start iodizing raw salt? _____	YEARIS
3. Are you still iodizing raw salt?	
☐ YES, go to no. 4 ☐ NO, go to no. 5	PRODIS
4. If yes, how long has the company been iodizing raw salt? _____	LONGIS
Ask the reason if there is gap between the start year of iodization and current year. Write reason below.	
_____	
_____	
_____	
5. If no, what year did you stop iodizing raw salt? _____	LENGTH
6. If no, who does the iodization of the raw salt?	OUTSIDEIS
Name Address	
_____ _____	
_____ _____	
_____ _____	
_____ _____	

Proceed to QA/QC Questionnaire if presently iodizing raw salt or selling iodized salt. If not iodizing raw salt or selling iodized salt, proceed to NEEDS ASSESSMENT question below.

NEEDS ASSESSMENT	CODE
1. What assistance do you need to help improve your business?	ASSISTANCE
(ie, assistance with marketing, training acquisition, financing consultancy and product development)	
_____	
_____	
_____	

---------- END OF INTERVIEW ----------

Annex 3. Quality Control/Quality Assurance interview schedule

Quality Control/Quality Assurance Interview Schedule
A Survey of Salt Importers, Producers and Traders in the Philippines: an Evaluation of Internal and External Assurance and Control

IDENTIFICATION: _____

Interviewer: _____ Interview Date : __ __ / __ __/ __ __

Name of company: _____

Respondent's name: _____

Designation: _____

INFORMATION ON GUIDELINES	**CODE**
1. Are you familiar with the Guidelines on Salt Iodization?	GUIDELINES
☐ Yes, go to no 2 ☐ No, go to next section	
2. What do you know of the Guidelines?	KNOWGUIDE
_____	
_____	
_____	
3. From whom/where did you know about the Guidelines?	SOURCEGUIDE
_____	
_____	

DOCUMENTATION REQUIREMENTS					**CODE**
1. Ask if the following documents exist (actual documents should be seen)					
Operation manual	☐	YES	☐	NO _____	OPSMAN
Documented duties and responsibilities of staff	☐	YES	☐	NO _____	JOBDESC
Manufacturing process	☐	YES	☐	NO _____	MNFRPROC
Good manufacturing process	☐	YES	☐	NO _____	GMPROC
Quality control procedure	☐	YES	☐	NO _____	QCPROC
Sanitation and safety procedure	☐	YES	☐	NO _____	SSPROC
Flowchart of manufacturing process	☐	YES	☐	NO _____	FLOWCHART

PERSONNEL REQUIREMENT				**CODE**
1. Who are the personnel involved in the iodization of salt?				
Name	**Position**	**Qualifications**	**Employment Duration**	PERSONNEL
_____	_____	_____	_____	
_____	_____	_____	_____	
_____	_____	_____	_____	

PROCESS 1. RECEIVING OF RAW MATERIALS

1. How is the salt for iodization received/inspected? (probe for machine, process, measurement techniques and frequency of method)

2. How is the fortificant received or bought? (probe for method, process, measurement techniques, frequency, person involved and control method)

PROCESS 2. STORAGE OF RAW MATERIALS	**CODE**
1. Is there an available warehouse for storage of raw salt and other materials and equipment for iodization? ☐ YES ☐ NO	WHOUSE
Write the description of the storage area by observing (ie presence of walls, roofing, ventilation etc)	
2. What system of storage and use of raw material is being followed? (ie. FIFO) probe	SYSTEMSTORE

FACILITIES REQUIREMENT					**CODE**
Observe the availability of the following utilities:					
Potable and sufficient water supply	☐	YES	☐	NO	WATER
Hand-washing facilities (with soap)	☐	YES	☐	NO	HANDWS
Toilet facilities	☐	YES	☐	NO	TOILET
Sewage disposal	☐	YES	☐	NO	SEWAGE
Installed plumbing	☐	YES	☐	NO	PLUMB
Floor drainage	☐	YES	☐	NO	DRAIN
Garbage disposal	☐	YES	☐	NO	GARBAGE
Power supply	☐	YES	☐	NO	POWER
Adequate lighting facilities	☐	YES	☐	NO	LIGHT
Adequate ventilation	☐	YES	☐	NO	VENTI
Available humidity control equipment	☐	YES	☐	NO	HUMID
Other facilities available:					OFACILITY
_____					
_____					

PROCESS 3. IODIZATION PROCESS					**CODE**
1. What type of raw salt do you iodized?					TYPEIS
_____					
2. Is the raw salt checked before salt iodization? If yes, describe (probe for process, measurement technique, person involved and control)					RAWCHK
_____					
_____					
_____					
_____					
_____					
3. Observe availability of the following equipment and utensils					
Platform scale, bulk weighing	☐	YES	☐	NO	SCALE
Weighing scale, small capacity	☐	YES	☐	NO	WEIGH
Plastic basin	☐	YES	☐	NO	BASIN
Plastic packaging material	☐	YES	☐	NO	PACK
Gloves	☐	YES	☐	NO	GLOVES
Plastic sealing machine	☐	YES	☐	NO	SEALER
Calibrated bottles/cylinder	☐	YES	☐	NO	CYLIN
Sprayer	☐	YES	☐	NO	SPRAYER
Other equipment and utensils used for iodization:					OEQPT
_____					
_____					

4. Observe the status of the equipment and utilities (cleanliness, maintenance, person-in-charge, control method) _____ _____ _____	STATEQPT
5. If the company has an iodine sprayer, what type is/are available? _____	TYPESPRAYER
6. What is the capacity of the iodine sprayer per batch production? _____	CAPACITY
7. What is the status of the iodine sprayer? ☐ Operational ☐ Non-operational	STATUS
8. How frequent is the iodine sprayer calibrated? _____	CALIBIS
9. How frequent does the iodine sprayer undergo routine maintenance? _____	MAINIZMACH
10. If the company has an iodization machine, what type is/are available? _____	MACHINE
11. Ask the following information for the iodization machine:	
Manufacturer : _____	MNAME
Date of manufacture: _____	MDATE
Date of acquisition: _____	MBUY
Main material of the machine: _____	MMATERIAL
12. How much is the capacity of the iodization machine per batch production? _____	CAPIM
13. How many batches of raw salt is iodized per production? _____	BATCHIM
14. What is the status of the iodizing machine? ☐ Operational, go to no 15 ☐ Non-operational	STATUS
15. How frequently is the iodization machine calibrated? _____	CALIBIM
16. How frequent does the iodization machine undergo routine maintenance? _____	MAINIM
17. What fortificant is used during iodization? _____	FORTI
18. What is your iodization level?	TARGET
Target Minimum Maximum _____ _____ _____ _____ _____ _____	
19. Ask the following information on the iodine fortificant solution:	FORTIFICANT
Fortificant / Quantity/batch production / Weight of fortificant / Amount of water	FQNTYBATCH
_____ _____ _____ _____	FWTFORT
_____ _____ _____ _____	FWATER

MANUFACTURING PROCESS	CODE
19. How is raw salt iodized?	HOWIS
☐ Iodization machine ☐ Manual	
Describe the iodization process (probe on process, mixing time, and person)	
_____	
_____	
_____	
_____	
_____	
20. Use of iodized salt produced:	USEIS
_____	
_____	
21. What is the frequency of producing iodized salt?	FRQIS
_____	
22. Total iodize salt produced in the last year per use of salt:	

	Quantity	Unit of Measurement	
Human consumption	_____	_____	HCPRODIS
Food processing	_____	_____	FOODPRODIS
Animal consumption	_____	_____	ANPRODIS
Others, _____	_____	_____	

PROCESS 4. QUALITY CONTROL	CODE
1. Are there available quality control facilities/food laboratory?	QCFA
☐ YES ☐ NO	
2. Type of quality control method practiced	METHOD
_____	
3. If using spot testing, ask the following information:	RTKBRAND

Brand	Manufacturer	Date Manufactured	Expiration Date	Content	
_____	_____	_____	_____	_____	RTKMFTURER
_____	_____	_____	_____	_____	RTKDATE
					RTKEXPIRED
4. How frequent is spot testing done?					RTKCONTENT
_____					RTKFREQ
5. How many samples are collected for the RTK per batch of spot test?					
_____					

6. If using the titration method, observe if the following equipment/glass wares/reagents are available:

Digital weighing scale	☐	YES	____ pc usable units	☐	NO	DIGITAL
Balance beam	☐	YES	____ pc usable units	☐	NO	BALANCE
Calibrators	☐	YES	____ pc usable units	☐	NO	CALIBS
Volumetric flask	☐	YES	____ pc usable units	☐	NO	FLASK
Measuring cylinder	☐	YES	____ pc usable units	☐	NO	CYLINDER

Beakers	☐	YES	____	pc usable units	☐	NO	BEAKER
Erlenmeyer flask w/ stopper	☐	YES	____	pc usable units	☐	NO	ERLEN
Volumetric pippet	☐	YES	____	pc usable units	☐	NO	PIPPET
Buret w/ stopcock	☐	YES	____	pc usable units	☐	NO	BURET
Buret stand	☐	YES	____	pc usable units	☐	NO	STAND
Funnel	☐	YES	____	pc usable units	☐	NO	FUNNEL
Spatula	☐	YES	____	pc usable units	☐	NO	SPATULA
Dropper	☐	YES	____	pc usable units	☐	NO	DROPPER
Na thiosulfate pentahydrate	☐	YES	____	pc usable units	☐	NO	NATHIO
Sulfuric acid	☐	YES	____	pc usable units	☐	NO	SULFUR
Potassium iodide	☐	YES	____	pc usable units	☐	NO	KIO2
Soluble starch	☐	YES	____	pc usable units	☐	NO	STARCH

7. How frequent is the titration method done? TITRATE

_____
__

8. Where there instances where the iodine level, based on the spot/titration test was not met? RESULT

☐ YES ☐ NO

9. What action was taken? Describe in detail. ACTION

_____

_____

_____

_____

PROCESS 5. PACKAGING **CODE**

1. What packaging material is/are used in packing/repacking the iodized salt? PACKMAT

1	Sack, woven HDPE (new)	6	Woven basket
2	Sack, woven HDPE (second hand)	7	Plastic PP bottle
3	Sack, PP (new)	8	Plastic, HDPE
4	Sack, PP (second hand)	9	Plastic, PP
5	Sack with plastic lining	10	Others: _____

2. What sizes of packing are available for iodized salt? PACKSIZE

_____

_____

_____

3. Observe if the packaging contains the following information:

Product name	☐	YES	☐	NO	NAME
Manufacturer's name	☐	YES	☐	NO	MANNAME
Manufacturing date	☐	YES	☐	NO	MANDATE

Net weight	☐	YES	☐	NO	NETWT
Iodine fortificant used	☐	YES	☐	NO	FORTIUSED
Open date marking	☐	YES	☐	NO	DATEMARK
Lot identification code	☐	YES	☐	NO	LOTID
Storage instructions	☐	YES	☐	NO	INSTRUCT

SANITATION AND SAFETY SYSTEM					**CODE**
1.Observe if the following protective clothing/uniform available for all workers?					
Caps	☐	YES	☐	NO	CAPS
Hair nets	☐	YES	☐	NO	NETS
Laboratory gown	☐	YES	☐	NO	GOWN
Apron	☐	YES	☐	NO	APRON
Rubber boots	☐	YES	☐	NO	BOOTS
Rubber gloves	☐	YES	☐	NO	RGLOVES
2. Is there an adequate first-aid facility available?					FAID
☐ YES			☐ NO		
3. Does the company practice fumigation control?					FUMIGATE
☐ YES, go to no 4			☐ NO, go to the next section		
4. In the last year, how often was fumigation done?					FUMIX
_____					

STORAGE, HANDLING AND DISTRIBUTION	**CODE**
1. Describe how the iodized salt are stored (ie. with pallet, under roofing, in box etc)	STOREIS
_____	
_____	
_____	
2. Describe the system of storage and disposal of iodized salt (ie. FIFO)	FIFO
_____	
_____	
_____	
3. Does the company provide certificate of product analysis to all customers?	CERTIFICATE
☐ YES ☐ NO	
4. Quantity of iodized salt sold last year:	ISSOLD

	Quantity	Unit of measurement
Human consumption	_____	_____
Food processing	_____	_____
Animal consumption	_____	_____
Others: _____	_____	_____

5. Selling price of iodized salt: ISPRICE

Price	Unit of measurement
_____	_____
_____	_____
_____	_____
_____	_____

6. What is the usual mode of transportation in transporting iodized salt to costumers? ISTRANSPORT

1 Truck
2 Jeep/van/pick-up
3 Tricycle/Pedicab
4 Boat/banca/ferry
5 Others _____

7. To whom do you sell your iodized salt? ISBUYER

Name	Address	Quantity	Frequency
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

8. Where is the usual destination of the iodized salt sold?

1 Same place where salt was produced
2 Metro Manila
3 Luzon, give specific area _____
4 Visayas,give specific area _____
5 Mindanao, give specific area _____

9. Is there a system for product recall? ISRECALL

☐ YES ☐ NO

10. Please describe the system SYSTEMRECALL

_____
_____
_____
_____
_____

11. Has the company experienced any product recall? RECALLIS

☐ YES ☐ NO

RECORD-KEEPING	**CODE**
1. Are there forms used /accomplished during production/storage/distribution?	FORMS
☐ YES, go to no. 2 ☐ NO, go to no. 3	
2. What are these forms?	NAMEFORMS
Title Purpose	
_____ _____	
_____ _____	
_____ _____	
_____ _____	

NEEDS ASSESSMENT	**CODE**
1. What assistance do you need to help improve your business?	ASSISTANCE
(ie, assistance with marketing, training acquisition, financing consultancy and product development)	
_____	
_____	
_____	
_____	

SALT SAMPLING	**CODE**
1. Salt sample collected?	SAMPLING
☐ YES, go to no. 2 ☐ NO, end of interview	
2. Indicate code of salt samples	SAMPLECODE
_____ _____	
_____ _____	

----------END OF INTERVIEW----------

Annex 4. Consent/Confidentiality letter

_____

Dear Sir/Madam:

Good Day!

We are from the Nutrition Center of the Philippines (NCP), a private, non-stock, non-profit organization involved in public health nutrition. We were commissioned by the Global Alliance for Improved Nutrition (GAIN) to conduct a survey among salt producers/manufacturers, importers and traders in selected provinces in Luzon, Visayas and Mindanao. The survey aims to describe the location, distribution, size and scale of production of salt importers and producers; to plot the coordinates of location and estimated boundaries of existing salt producers, and to document and evaluate the quality assurance and control systems and practices of salt producers and importers.

In this regard, may we request for your participation in our survey? Rest assured that your participation in our survey will be confidential and all information you will give or any information that we have obtained will not be disclosed to any person except to those specifically authorized by us. Further, we guarantee that details of information will not be given to any regulatory agencies.

Thank you very much.

Respectfully yours,

CHERRY C. MARAMAG
Researcher/Project Leader

DR. JUAN ANTONIO A. SOLON
Executive Director

This is to certify that I have read and understood the content of this letter and that I have _____ agreed / _____ disagreed to participate in the survey.

Respondent:

_____

Name and Signature

Position: _____

Date: _____

Witness:

_____

Name and Signature

Position: _____

Date: _____

Annex 5. Detailed results of the survey among salt producers

Table 5-1. Frequency and percent distribution of salt producers by years operational per province

Province	<= 10 years		>10 and <=25 years		>25 and <=50 years		> 50 years		Total*
	n	%	n	%	n	%	n	%	
Luzon	***87***	***33.2***	***69***	***26.3***	***82***	***31.2***	***24***	***9.2***	***262***
Ilocos Sur	5	22.7	7	31.8	9	40.9	1	4.6	22
Ilocos Norte	9	40.9	6	27.3	5	22.7	2	9.1	22
La Union	2	66.7	0	0.0	0	0.0	1	33.3	3
Pangasinan	42	41.6	28	27.7	29	28.7	2	2.0	101
Bulacan	0	0.0	3	14.3	6	28.6	12	57.1	21
Occidental Mindoro	29	31.2	25	26.9	33	35.5	6	6.5	93
Visayas	***43***	***42.2***	***28***	***27.5***	***27***	***26.5***	***4***	***3.9***	***102***
Iloilo	8	26.7	8	26.7	13	43.3	1	3.3	30
Guimaras	23	52.3	18	40.9	3	6.8	0	0.00	44
Negros Occidental	9	52.9	2	11.8	5	29.4	1	5.9	17
Negros Oriental	1	16.7	0	0.0	4	66.7	1	16.7	6
Cebu	2	40.0	0	0.0	2	40.0	1	20.0	5
Mindanao	***2***	***20.0***	***3***	***30.0***	***4***	***40.0***	***1***	***10.0***	***10***
Misamis Oriental	2	33.3	2	33.3	2	33.3	0	0.0	6
General Santos City	0	0.0	0	0.0	1	100.0	0	0.0	1
Zamboanga	0	0.0	1	33.3	1	33.3	1	33.3	3
Total	**132**	**35.3**	**100**	**26.7**	**113**	**30.2**	**29**	**7.8**	**374**

*1 respondent indicated no answer

Table 5-2. Frequency and percent distribution of salt producers by status of business registration per province

Province	Not registered		Registered, document shown		Registered, document not shown		Do not know		Total
	n	%	n	%	n	%	n	%	
Luzon	***106***	***40.3***	***21***	***7.9***	***122***	***46.4***	***14***	***5.3***	***263***
Ilocos Sur	23	100.0	0	0.0	0	0.0	0	0.0	23
Ilocos Norte	16	72.7	1	4.6	5	22.7	0	0.0	22
La Union	2	66.7	0	0.0	1	33.3	0	0.0	3
Pangasinan	15	14.9	17	16.8	64	63.4	5	5.0	101
Bulacan	4	14.1	0	0.0	14	66.7	3	14.3	21
Occidental Mindoro	46	49.5	3	3.2	38	40.9	6	6.5	93
Visayas	***50***	***49.0***	***0***	***0.0***	***46***	***45.1***	***6***	***5.9***	***102***
Iloilo	13	43.3	0	0.0	16	53.3	1	3.3	30
Guimaras	27	61.4	0	0.0	14	31.8	3	6.8	44
Negros Occidental	8	47.1	0	0.0	8	47.1	1	5.9	17
Negros Oriental	2	33.3	0	0.0	4	66.7	0	0.0	6
Cebu	0	0.0	0	0.0	4	80.0	1	20.0	5
Mindanao	***0***	***0.0***	***0***	***0.0***	***9***	***90.0***	***1***	***10.0***	***10***
Misamis Oriental	0	0.0	0	0.0	6	100.0	0	0.0	6
General Santos City	0	0.0	0	0.0	1	100.0	0	0.0	1
Zamboanga	0	0.0	0	0.0	2	66.7	1	33.3	3
Total	**156**	**41.6**	**21**	**5.6**	**177**	**47.2**	**21**	**5.6**	**375**

Table 5-3. Frequency and percent distribution of salt producers by status of license to operate per province

Province	Not licensed		Licensed, document shown		Licensed, document not shown		Do not know		Total
	n	%	n	%	n	%	n	%	
Luzon	***109***	***41.4***	***1***	***0.4***	***136***	***51.7***	***17***	***6.5***	***263***
Ilocos Sur	23	100.0	0	0.0	0	0.0	0	0.0	23
Ilocos Norte	16	72.7	0	0.0	6	27.3	0	0.0	22
La Union	1	33.3	0	0.0	2	66.7	0	0.0	3
Pangasinan	13	12.9	0	.0.0	82	81.2	6	5.9	101
Bulacan	4	19.1	0	0.0	13	61.9	4	19.1	21
Occidental Mindoro	52	55.9	1	1.1	33	35.5	7	7.5	93
Visayas	***51***	***50.0***	***0***	***0.0***	***47***	***46.1***	***4***	***3.9***	***102***
Iloilo	14	46.6	0	0.0	15	50.0	1	3.3	30
Guimaras	29	65.9	0	0.0	14	31.8	1	2.3	44
Negros Occidental	8	47.1	0	0.0	8	47.1	1	5.9	17
Negros Oriental	0	0.0	0	0.0	6	100.0	0	0.0	6
Cebu	0	0.0	0	0.0	4	80.0	1	20.0	5
Mindanao	***0***	***0.0***	***0***	***0.00***	***9***	***90.0***	***1***	***10.0***	***10***
Misamis Oriental	0	0.0	0	0.0	6	100.0	0	0.0	6
General Santos City	0	0.0	0	0.0	1	100.0	0	0.0	1
Zamboanga	0	0.0	0	0.0	2	66.7	1	33.3	3
Total	**160**	**42.7**	**1**	**0.3**	**192**	**51.2**	**22**	**5.9**	**375**

Table 5-4. Frequency and percent distribution of salt producers by method used to produce salt per province

Province	Solar evaporation		Cooking		Total
	n	%	n	%	
Luzon	***180***	***68.4***	***83***	***31.6***	***263***
Ilocos Sur	0	0.0	23	100.0	23
Ilocos Norte	0	0.0	22	100.0	22
La Union	0	0.0	3	100.0	3
Pangasinan	66	65.4	35	34.7	101
Bulacan	21	100.0	0	0.0	21
Occidental Mindoro	93	100.0	0	0.0	93
Visayas	***102***	***100.0***	***0***	***0.0***	***102***
Iloilo	30	100.0	0	0.0	30
Guimaras	44	100.0	0	0.0	44
Negros Occidental	17	100.0	0	0.0	17
Negros Oriental	6	100.0	0	0.0	6
Cebu	5	100.0	0	0.0	5
Mindanao	***10***	***100.0***	***0***	***0.0***	***10***
Misamis Oriental	6	100.0	0	0.0	6
General Santos City	1	100.0	0	0.0	1
Zamboanga	3	100.0	0	0.0	3
Total	**292**	**77.9**	**83**	**22.1**	**375**

Table 5-5. Frequency and percent distribution of salt producers by area of land used for salt production per province*

Province	< = 1 hectare		>1 & < = 10 hectare		> 10 & <= 25 hectare		> 25 & <= 50 hectare		>50 hectare		Unknown		Total
	n	%	n	%	n	%	n	%	n	%	n	%	
Luzon	***24***	***13.3***	***96***	***53.3***	***20***	***11.1***	***13***	***7.2***	***10***	***5.6***	***17***	***9.4***	***180***
Pangasinan	9	13.6	46	69.7	4	6.1	2	3.0	4	6.1	1	1.5	66
Bulacan	0	0.0	6	28.7	6	28.6	4	19.1	2	9.5	3	14.3	21
Occidental Mindoro	15	16.1	44	47.3	10	10.8	7	7.5	4	4.3	13	14.0	93
Visayas	***17***	***16.7***	***59***	***57.8***	***15***	***14.7***	***7***	***6.9***	***1***	***1.0***	***3***	***2.9***	***102***
Iloilo	2	6.7	18	60.0	6	20.0	4	13.3	0	0.0	0	0.0	30
Guimaras	10	22.7	25	56.8	3	6.8	2	4.6	1	2.3	3	6.8	44
Negros Occidental	2	11.8	11	64.7	4	23.5	0	0.0	0	0.0	0	0.0	17
Negros Oriental	2	33.3	3	50.0	1	16.7	0	0.0	0	0.0	0	0.0	6
Cebu	1	20.0	2	40.0	1	20.0	1	20.0	0	0.0	0	0.0	5
Mindanao	***0***	***0.0***	***8***	***80.0***	***0***	***0.0***	***2***	***20.0***	***0***	***0.0***	***0***	***0.0***	***10***
Misamis Oriental	0	0.0	5	83.3	0	0.0	1	16.7	0	0.0	0	0.0	6
General Santos City	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0	1
Zamboanga	0	0.0	3	100.0	0	0.0	0	0.0	0	0.0	0	0.0	3
Total	**41**	**14.0**	**163**	**55.8**	**35**	**12.0**	**22**	**7.5**	**11**	**3.8**	**20**	**6.9**	**292**

*Salt producers using the cooking method are excluded

Table 5-6. Frequency and percent distribution of salt producers by type of salt beds used per province*

Province	Ceramic		Stones		Cement		Plastic sheet		Wood		Others[+]		Total
	n	%	n	%	n	%	n	%	n	%	n	%	
Luzon	***126***	***70.0***	***15***	***8.3***	***37***	***20.6***	***19***	***10.6***	***14***	***7.8***	***8***	***4.4***	***180***
Pangasinan	63	95.5	0	0.0	0	0.00	0	0.0	1	1.5	2	3.0	66
Bulacan	17	81.0	6	28.6	0	0.00	0	0.0	4	19.1	0	0.0	21
Occidental Mindoro	46	49.5	9	9.8	37	39.78	19	20.4	9	9.7	6	6.4	93
Visayas	***22***	***21.6***	***2***	***2.0***	***4***	***3.9***	***79***	***77.5***	***0***	***0.0***	***1***	***1.0***	***102***
Iloilo	10	33.3	1	3.3	0	0.00	21	70.0	0	0.0	1	3.3	30
Guimaras	0	0.0	0	0.0	4	9.09	40	90.9	0	0.0	0	0.0	44
Negros Occidental	2	11.8	0	0.0	0	0.00	15	88.3	0	0.0	0	0.0	17
Negros Oriental	5	83.3	1	16.7	0	0.00	3	50.0	0	0.0	0	0.0	6
Cebu	5	100.0	0	0.0	0	0.00	0	0.0	0	0.0	0	0.0	5
Mindanao	***4***	***40.0***	***4***	***40.0***	***0***	***0.0***	***5***	***50.0***	***0***	***0.0***	***0***	***0.0***	***10***
Misamis Oriental	3	50.0	1	16.7	0	0.00	5	83.3	0	0.0	0	0.0	6
General Santos City	1	100.0	0	0.0	0	0.00	0	0.0	0	0.0	0	0.0	1
Zamboanga	0	0.0	3	100.0	0	0.00	0	0.0	0	0.0	0	0.0	3
Total	**152**	**44.7**	**21**	**7.2**	**41**	**12.1**	**103**	**30.3**	**14**	**4.1**	**9**	**3.1**	**292**

*Salt producers using the cooking method are excluded; multiple responses

[+]Tiles, mud

Table 5-7. Frequency and percent distribution of salt producers by type of salt produced per province

Province	Coarse		Fine		Total
	n	%	n	%	
Luzon	***177***	***68.1***	***83***	***31.9***	***260***
Ilocos Sur	0	0.0	23	100.0	23
Ilocos Norte	0	0.0	22	100.0	22
La Union	0	0.0	3	100.0	3
Pangasinan	65	65.0	35	35.0	100
Bulacan	21	100.0	0	0.0	21
Occidental Mindoro	91	100.0	0	0.0	91
Visayas	***102***	***100.0***	***0***	***0.0***	***102***
Iloilo	30	100.0	0	0.0	30
Guimaras	44	100.0	0	0.0	44
Negros Occidental	17	100.0	0	0.0	17
Negros Oriental	9	100.0	0	0.0	9
Cebu	5	100.0	0	0.0	5
Mindanao	***10***	***100.0***	***0***	***0.0***	***10***
Misamis Oriental	6	100.0	0	0.0	6
General Santos City	1	100.0	0	0.0	1
Zamboanga	3	100.0	0	0.0	3
Total	**289**	**77.7**	**83**	**22.3**	**372**

*2 respondents were producing “dumalaga” salt that has granule size between coarse and fine salt; 1 respondent was producing “mud” salt

Table 5-8. Frequency and percent distribution of salt producers by quantity of salt produced in the last year (2009) per province

Province	<= 2 MT		>2 & <=300 MT		>300 & <=2,000 MT		>2,000 MT		Total
	n	%	n	%	n	%	n	%	
Luzon	***28***	***11.2***	***162***	***64.8***	***56***	***22.4***	***4***	***1.6***	***250***
Ilocos Sur	15	79.0	4	21.1	0	0.0	0	0.0	19
Ilocos Norte	10	47.6	10	47.6	1	4.8	0	0.0	21
La Union	0	0.0	3	100.0	0	0.0	0	0.0	3
Pangasinan	3	3.1	72	73.5	23	23.5	0	0.0	98
Bulacan	0	0.0	11	52.4	10	47.6	0	0.0	21
Occidental Mindoro	0	0.0	62	70.5	22	25.0	4	4.6	88
Visayas	***5***	***5.8***	***79***	***90.8***	***3***	***3.5***	***0***	***0.0***	***87***
Iloilo	2	12.5	21	87.5	0	0.0	0	0.0	24
Guimaras	2	5.4	32	86.49	3	8.11	0	0.0	37
Negros Occidental	0	0.0	17	100.0	0	0.0	0	0.0	17
Negros Oriental	0	0.0	5	100.0	0	0.0	0	0.0	5
Cebu	0	0.0	4	100.0	0	0.0	0	0.0	4
Mindanao	***0***	***0.0***	***8***	***88.9***	***1***	***1.1***	***0***	***0.0***	***9***
Misamis Oriental	0	0.0	5	100.0	0	0.0	0	0.0	5
General Santos City	0	0.0	0	0.0	1	100.0	0	0.0	1
Zamboanga	0	0.0	3	100.0	0	0.0	0	0.0	3
Total	**33**	**9.5**	**249**	**72.0**	**60**	**17.3**	**4**	**1.2**	**346***

*3 respondents did not produce salt the previous year; 26 respondents do not know the amount of salt produced the previous year

Table 5-9. Frequency and percent distribution of salt producers by the use of salt produced per province*

Province	Human consumption		Food processing		Industrial		Animal		All		Total+
	n	%	n	%	n	%	n	%	n	%	
Luzon	***231***	***87.8***	***179***	***68.1***	***26***	***9.9***	***66***	***25.1***	***6***	***2.3***	***263***
Ilocos Sur	23	100.0	23	100.0	0	0.0	1	4.35	0	0.0	23
Ilocos Norte	21	95.4	20	90.9	0	0.0	1	4.6	0	0.0	22
La Union	3	100.0	2	66.7	0	0.0	0	0.0	0	0.0	3
Pangasinan	81	81.0	61	60.4	15	14.9	19	18.8	4	4.0	101
Bulacan	17	81.0	16	76.2	2	9.5	12	57.1	1	4.8	21
Occidental Mindoro	86	92.5	57	61.3	26	9.9	33	35.5	1	1.1	93
Visayas	***96***	***96.0***	***92***	***92.0***	***0***	***0.0***	***31***	***31.0***	***0***	***0.0***	***100***
Iloilo	27	93.1	25	86.2	0	0.0	7	24.1	0	0.0	29
Guimaras	43	100.0	41	95.4	0	0.0	12	27.9	0	0.0	43
Negros Occidental	17	100.0	17	100.0	0	0.0	8	47.1	0	0.0	17
Negros Oriental	6	100.0	4	66.7	0	0.0	3	50.0	0	0.0	6
Cebu	3	60.0	5	100.0	0	0.0	1	20.0	0	0.0	5
Mindanao	***6***	***60.0***	***7***	***70.0***	***1***	***10.0***	***4***	***40.0***	***0***	***0.0***	***10***
Misamis Oriental	5	83.3	5	83.3	1	16.7	2	33.3	0	0.0	6
General Santos City	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0	1
Zamboanga	1	33.3	2	66.7	0	0.0	1	33.3	0	0.0	3
Total	**333**	**89.3**	**278**	**74.5**	**27**	**7.2**	**101**	**27.1**	**6**	**1.6**	**373**

*Multiple responses
+Refers to total number of respondent; 2 respondents indicated no answer

Table 5-10. Frequency and percent distribution of salt producers by availability of warehouse for storing produced raw salt per province

Province	Available		Not available		Total
	n	%	n	%	
Luzon	***185***	***70.3***	***78***	***29.7***	***263***
Ilocos Sur	6	26.1	17	73.9	23
Ilocos Norte	18	81.8	4	18.2	22
La Union	3	100.0	0	0.0	3
Pangasinan	83	82.2	18	17.8	101
Bulacan	19	90.5	1	9.5	21
Occidental Mindoro	56	60.2	27	39.8	93
Visayas	***83***	***81.4***	***19***	***18.6***	***102***
Iloilo	26	86.7	4	13.3	30
Guimaras	36	81.8	8	18.2	44
Negros Occidental	11	64.7	6	35.3	17
Negros Oriental	5	83.3	1	16.7	6
Cebu	5	100.0	0	0.0	5
Mindanao	***10***	***100.0***	***0***	***0.0***	***10***
Misamis Oriental	6	100.0	0	0.0	6
General Santos City	1	100.0	0	0.0	1
Zamboanga	3	100.0	0	0.0	3
Total	**278**	**74.1**	**97**	**25.9**	**375**

Table 5-11a. Frequency and percent distribution of salt producers by description of storage container used for storing raw salt for those with warehouses per province*

Province	Dumped on floor		Sack		Woven basket		Total+
	n	%	n	%	n	%	
Luzon	***123***	***66.1***	***65***	***34.9***	***4***	***2.2***	***186***
Ilocos Sur	1	16.67	5	83.3	0	17.4	6
Ilocos Norte	6	33.3	10	55.6	4	22.2	18
La Union	1	33.3	2	66.7	0	0.0	3
Pangasinan	75	90.4	12	14.5	0	0.0	83
Bulacan	19	100.0	0	0.0	0	0.0	19
Occidental Mindoro	21	37.5	36	64.3	0	0.0	57
Visayas	***53***	***63.9***	***34***	***41.0***	***1***	***1.2***	***84***
Iloilo	16	61.5	11	42.3	0	0.0	27
Guimaras	25	69.4	14	38.9	1	2.8	36
Negros Occidental	2	18.2	8	72.7	0	0.0	11
Negros Oriental	5	9.4	1	20.0	0	0.0	5
Cebu	5	100.0	0	0.0	0	0.0	5
Mindanao	***9***	***90.0***	***4***	***40.0***	***0***	***0.0***	***10***
Misamis Oriental	5	83.3	4	66.7	0	0.0	6
General Santos City	1	100.0	0	0.0	0	0.0	1
Zamboanga	3	100.0	0	0.0	0	0.0	3
Total	**185**	**64.7**	**103**	**36.0**	**5**	**1.7**	**286**

*Multiple responses
+Total number of respondents

Table 5-11b. Frequency and percent distribution of salt producers by description of storage container used for storing raw salt for those without warehouses per province*

Province	Dumped on floor		Sack		Woven basket		Can		Total+
	n	%	n	%	n	%	n	%	
Luzon	***44***	***56.4***	***32***	***41.0***	***6***	***7.7***	***1***	***1.3***	***77***
Ilocos Sur	0	0.0	14	82.4	4	23.5	1	5.9	17
Ilocos Norte	0	0.0	3	75.0	2	50.0	0	0.0	4
La Union	0	0.0	0	0.0	0	0.0	0	0.0	0
Pangasinan	18	100.0	1	5.6	0	0.0	0	0.0	18
Bulacan	1	100.0	0	0.0	0	0.0	0	0.0	1
Occidental Mindoro	24	64.9	14	37.8	0	0.0	0	0.0	36
Visayas	***5***	***26.3***	***15***	***79.0***	***0***	***0.0***	***0***	***0.0***	***18***
Iloilo	1	25.0	3	75.0	0	0.0	0	0.0	3
Guimaras	3	37.5	7	87.5	0	0.0	0	0.0	8
Negros Occidental	1	16.7	4	66.7	0	0.0	0	0.0	6
Negros Oriental	0	0.0	1	100.0	0	0.0	0	0.0	1
Cebu	0	0.0	0	0.0	0	0.0	0	0.0	0
Total	**49**	**51.6**	**47**	**49.5**	**6**	**6.3**	**1**	**1.1**	**95**

*Multiple responses
+Total number of respondents

Table 5-12. Frequency and percent distribution of salt producers by description of packaging container used for selling salt per province*

Province	Sack		Plastic bag		Woven basket		Can		Total+
	n	%	n	%	n	%	n	%	
Luzon	***259***	***98.5***	***2***	***0.8***	***1***	***0.4***	***1***	***0.4***	***263***
Ilocos Sur	20	87.0	2	8.7	0	0.0	1	4.35	23
Ilocos Norte	21	95.5	0	0.0	1	4.6	0	0.0	22
La Union	3	100.0	0	0.0	0	0.0	0	0.0	3
Pangasinan	101	100.0	0	0.0	0	0.0	0	0.0	101
Bulacan	21	100.0	0	0.0	0	0.0	0	0.0	21
Occidental Mindoro	93	100.0	0	0.0	0	0.0	0	0.0	93
Visayas	***102***	***100.0***	***0***	***0.0***	***0***	***0.0***	***0***	***0.0***	***102***
Iloilo	30	100.0	0	0.0	0	0.0	0	0.0	30
Guimaras	44	100.0	0	0.0	0	0.0	0	0.0	44
Negros Occidental	17	100.0	0	0.0	0	0.0	0	0.0	17
Negros Oriental	6	100.0	0	0.0	0	0.0	0	0.0	6
Cebu	5	100.0	0	0.0	0	0.0	0	0.0	5
Mindanao	***10***	***100.0***	***0***	***0.0***	***0***	***0.0***	***0***	***0.0***	***10***
Misamis Oriental	6	100.0	0	0.0	0	0.0	0	0.0	6
General Santos City	1	100.0	0	0.0	0	0.0	0	0.0	1
Zamboanga	3	100.0	0	0.0	0	0.0	0	0.0	3
Total	**371**	**98.9**	**2**	**0.53**	**1**	**0.27**	**1**	**0.27**	**375**

*Multiple responses
+Refers to total number of respondents

Table 5-13. Frequency and percent distribution of salt producers by available packing sizes of salt when selling per province*

Province	Less than or equal to 5 kgs		> 5 & <= 50 kgs		Greater than 50 kgs		Total
	n	%	n	%	n	%	
Luzon	***6***	***2.3***	***123***	***46.8***	***161***	***61.2***	***263***
Ilocos Sur	5	21.7	17	73.9	5	21.7	23
Ilocos Norte	0	0.0	8	36.4	14	63.6	22
La Union	0	0.0	2	66.7	1	33.3	3
Pangasinan	1	1.0	56	55.5	57	56.4	101
Bulacan	0	0.0	6	28.6	19	90.5	21
Occidental Mindoro	0	0.0	34	36.6	65	69.9	93
Visayas	***0***	***0.0***	***9***	***8.8***	***96***	***94.1***	***102***
Iloilo	0	0.0	1	3.3	30	100.0	30
Guimaras	0	0.0	2	4.6	42	95.5	44
Negros Occidental	0	0.0	2	11.8	15	88.2	17
Negros Oriental	0	0.0	2	33.3	5	83.3	6
Cebu	0	0.0	2	40.0	4	80.0	5
Mindanao	***0***	***0.0***	***8***	***80.0***	***2***	***20.0***	***10***
Misamis Oriental	0	0.0	5	83.3	1	100.0	6
General Santos City	0	0.0	0	0.0	1	100.0	1
Zamboanga	0	0.0	3	100.0	0	0.0	3
Total	**6**	**1.6**	**140**	**37.3**	**259**	**69.1**	**375**

*Multiple responses

Table 5-14. Frequency and percent distribution of salt producers by completeness of information* on the label of packages used when selling salt per province

Province	Complete		No label		Incomplete		Total[+]
	n	%	n	%	n	%	
Luzon	***14***	***5.4***	***225***	***86.2***	***22***	***8.4***	***261***
Ilocos Sur	0	0.0	22	95.6	1	4.4	23
Ilocos Norte	2	9.1	19	86.4	1	4.6	22
La Union	0	0.0	2	66.7	1	33.3	3
Pangasinan	0	0.0	99	98.0	2	2.0	101
Bulacan	1	5.0	19	95.0	0	0.0	20
Occidental Mindoro	11	12.0	64	69.6	17	18.5	92
Visayas	***0***	***0.0***	***99***	***97.1***	***3***	***2.9***	***102***
Iloilo	0	0.0	27	90.0	3	10.0	30
Guimaras	0	0.0	44	100.0	0	0.0	44
Negros Occidental	0	0.0	17	100.0	0	0.0	17
Negros Oriental	0	0.0	6	100.0	0	0.0	6
Cebu	0	0.0	5	100.0	0	0.0	5
Mindanao	***0***	***0.0***	***10***	***100.0***	***0***	***0.0***	***10***
Misamis Oriental	0	0.0	6	100.0	0	0.0	6
General Santos City	0	0.0	1	100.0	0	0.0	1
Zamboanga	0	0.0	3	100.0	0	0.0	3
Total	**14**	**3.8**	**334**	**89.54**	**25**	**6.7**	**373**

*Label has at least the manufacturer's name, company name and date of production

[+]2 respondents indicated no answer

Table 5-15. Frequency and percent distribution of salt producers by current selling price of raw salt per kilo (PhP/kg) during the survey per province

Province	Less than 1.00		>= 1.00 & <3.00		>= 3.00 & <7.00		>= 7.00 & <10.00		>=10.00		Total*
	n	%	n	%	n	%	n	%	n	%	
Luzon	***38***	***17.4***	***93***	***42.5***	***40***	***18.3***	***16***	***7.3***	***32***	***14.6***	***219***
Ilocos Sur	0	0.0	0	0.0	3	13.6	2	9.1	17	77.3	22
Ilocos Norte	0	0.0	1	5.3	1	5.3	2	10.5	15	79.0	19
La Union	0	0.0	0	0.0	0	0.0	2	100.0	0	0.0	2
Pangasinan	0	0.0	38	45.2	36	42.9	10	11.9	0	0.0	84
Bulacan	0	0.0	12	100.0	0	0.0	0	0.0	0	0.0	12
Occidental Mindoro	38	47.5	42	52.5	0	0.0	0	0.0	0	0.0	80
Visayas	***3***	***3.4***	***73***	***83.0***	***12***	***13.6***	***0***	***0.0***	***0***	***0.0***	***88***
Iloilo	0	0.0	21	75.0	7	25.0	0	0.0	0	0.0	28
Guimaras	3	7.1	39	92.9	0	0.0	0	0.0	0	0.0	42
Negros Occidental	0	0.0	11	73.3	4	26.7	0	0.0	0	0.0	15
Negros Oriental	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0	1
Cebu	0	0.0	1	50.0	1	50.0	0	0.0	0	0.0	2
Mindanao	***0***	***0.0***	***6***	***75.0***	***2***	***25.0***	***0***	***0.0***	***0***	***0.0***	***8***
Misamis Oriental	0	0.0	4	80.0	1	20.0	0	0.0	0	0.0	5
General Santos City	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0	1
Zamboanga	0	0.0	1	50.0	1	50.0	0	0.0	0	0.0	2
Total	**41**	**13.0**	**172**	**54.6**	**54**	**17.1**	**16**	**5.1**	**32**	**10.2**	**315**

*60 respondents indicated no answer to the question on current selling price of commercial salt

Table 5-16. Frequency and percent distribution of salt producers by quantity of non-iodized salt sold in the last year (2009) per province

Province	Less than 10 MT		>=10 & <100 MT		>=100 & <200 MT		>=200 & <300 MT		>=300 MT		Total*
	n	%	n	%	n	%	n	%	n	%	
Luzon	***35***	***13.3***	***91***	***34.6***	***37***	***16.2***	***15***	***6.6***	***51***	***22.3***	***229***
Ilocos Sur	16	88.9	1	5.6	1	5.6	0	0.0	0	0.0	18
Ilocos Norte	13	65.0	6	30.0	1	5.0	0	0.0	0	0.0	20
La Union	0	0.0	1	33.3	2	66.7	0	0.0	0	0.0	3
Pangasinan	3	3.4	41	46.6	21	23.9	7	8.0	16	18.2	88
Bulacan	0	0.0	5	33.3	2	13.3	0	0.0	8	53.3	15
Occidental Mindoro	3	3.5	37	43.5	10	11.8	8	9.4	27	31.8	85
Visayas	***21***	***27.6***	***46***	***60.5***	***4***	***5.3***	***1***	***1.3***	***4***	***5.3***	***76***
Iloilo	6	28.6	12	57.1	1	4.8	1	4.8	1	4.8	21
Guimaras	9	27.3	21	63.6	1	3.03	0	0.0	2	6.1	33
Negros Occidental	5	33.3	9	60.0	1	6.7	0	0.0	0	0.0	15
Negros Oriental	1	25.0	2	50.0	0	0.0	0	0.0	1	25.0	4
Cebu	0	0.0	2	66.7	1	33.3	0	0.0	0	0.0	3
Mindanao	***1***	***16.7***	***1***	***16.7***	***2***	***33.3***	***1***	***16.7***	***1***	***16.7***	***6***
Misamis Oriental	1	25.0	1	25.0	1	25.0	1	25.0	0	0.0	4
General Santos City	0	0.0	0	0.0	0	0.0	0	0.0	1	100.0	1
Zamboanga	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0	1
Total	**57**	**18.3**	**138**	**44.4**	**43**	**13.8**	**17**	**5.5**	**56**	**18.0**	**311**

*3 respondents did not produce salt the previous year; 61 respondents indicated no answer to the question on quantity of non-iodized salt sold last year

Table 5-17a. Frequency and percent distribution of salt producers by destination of salt sold per province

Province	Same area as produced		Metro Manila		Luzon		Visayas		Mindanao		Total
	n	%	n	%	n	%	n	%	n	%	
Luzon	***114***	***44.2***	***49***	***18.9***	***136***	***53.8***	***28***	***11.1***	***3***	***1.2***	***263***
Ilocos Sur	20	87.0	1	4.4	2	8.7	0	0.0	0	0.0	23
Ilocos Norte	17	77.3	6	27.3	9	40.9	0	0.0	0	0.0	22
La Union	1	33.3	0	0.0	1	33.3	0	0.0	0	0.0	3
Pangasinan	43	42.6	23	23.0	77	77.0	1	1.0	0	0.0	101
Bulacan	2	9.5	15	71.4	6	35.3	1	4.8	0	0.0	21
Occidental Mindoro	31	34.1	4	4.3	41	46.8	26	31.0	3	3.2	93
Visayas	***41***	***41.4***	***1***	***1.0***	***7***	***7.0***	***42***	***52.5***	***0***	***0.0***	***102***
Iloilo	18	64.3	1	3.3	2	7.1	3	13.6	0	0.0	30
Guimaras	3	7.0	0	0.0	3	6.8	35	94.6	0	0.0	44
Negros Occidental	13	76.5	0	0.0	0	0.0	1	9.1	0	0.0	17
Negros Oriental	3	50.0	0	0.0	0	0.0	2	40.0	0	0.0	6
Cebu	4	80.0	0	0.0	2	40.0	1	20.0	0	0.0	5
Mindanao	***7***	***70.0***	***0***	***0.0***	***0***	***0.0***	***0***	***0.0***	***0***	***0.0***	***10***
Misamis Oriental	5	83.3	0	0.0	0	0.0	0	0.0	0	0.0	6
General Santos City	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0	1
Zamboanga	1	33.3	0	0.0	0	0.0	0	0.0	0	0.0	3
Total	**162**	**44.1**	**50**	**13.4**	**143**	**39.4**	**70**	**20.4**	**3**	**0.8**	**375**

Table 5-17b. Percent distribution of salt producers by destination of raw salt produced (Part I – Manila and Regions CAR, Ilocos and Cagayan Valley)

Province	Manila	Abra	Apayao	Benguet	Ifugao	Ilocos Norte	Ilocos Sur	La Union	Pangasinan	Nueva Vizcaya	Cagayan	Isabela	Total
Luzon	***18.6***	***2.3***	***0.4***	***1.9***	***0.4***	***11.4***	***11.4***	***1.5***	***17.9***	***0.8***	***6.8***	***6.5***	***263***
Ilocos Sur	4.3	0.0	0.0	0.0	0.0	8.7	87.0	0.0	0.0	0.0	0.0	0.0	23
Ilocos Norte	27.3	9.1	4.6	0.0	0.0	77.3	4.6	0.0	0.0	0.0	31.8	13.6	22
La Union	0.0	0.0	0.0	0.0	0.0	0.0	33.3	33.3	0.0	0.0	0.0	0.0	3
Pangasinan	22.8	4.0	0.0	5.0	1.0	9.9	6.9	3.0	44.6	2.0	10.9	12.9	101
Bulacan	71.4	0.0	0.0	0.0	0.0	4.8	4.8	0.0	4.8	0.0	0.0	4.8	21
Occidental Mindoro	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	93
Visayas	***1.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***102***
Iloilo	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30
Guimaras	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44
Negros Occidental	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17
Negros Oriental	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6
Cebu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5
Mindanao	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***10***
Misamis Oriental	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6
General Santos	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Zamboanga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3
Total	**13.3**	**1.6**	**0.3**	**1.3**	**0.3**	**8.0**	**8.0**	**1.1**	**12.5**	**0.5**	**4.8**	**4.5**	**375**

Table 5-17c. Percent distribution of salt producers by destination of raw salt produced (Part 2 – Regions Central Luzon and CALABARZON)

Province	Zambales	Tarlac	Bulacan	Bataan	Pampanga	Nueva Ecija	Laguna	Quezon	Cavite	Batangas	Total
Luzon	***2.3***	***3.4***	***15.2***	***4.2***	***2.7***	***6.1***	***1.9***	***2.7***	***0.8***	***8.4***	***263***
Ilocos Sur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23
Ilocos Norte	0.0	0.0	4.6	0.0	4.6	0.0	0.0	0.0	0.0	0.0	22
La Union	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3
Pangasinan	5.9	9.0	35.6	10.9	5.9	14.9	3.0	6.9	2.0	3.0	101
Bulacan	0.0	0.0	14.3	0.0	0.0	4.8	4.8	0.0	0.0	0.0	21
Occidental Mindoro	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	20.4	93
Visayas	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***1.0***	***0.0***	***0.0***	***0.0***	***0.0***	***102***
Iloilo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30
Guimaras	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	44
Negros Occidental	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17
Negros Oriental	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6
Cebu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5
Mindanao	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***10***
Misamis Oriental	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6
General Santos	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Zamboanga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3
Total	**1.6**	**2.4**	**10.7**	**2.9**	**1.9**	**4.5**	**1.3**	**1.9**	**0.5**	**5.9**	**375**

Table 5-17d. Percent distribution of salt producers by destination of raw salt produced (Part 3 – Regions MIMAROPA and Bicol)

Province	Occidental Mindoro	Oriental Mindoro	Palawan	Romblon	Marinduque	Bicol	Masbate	Total
Luzon	***9.9***	***1.9***	***3.0***	***0.4***	***5.7***	***6.5***	***0.4***	***263***
Ilocos Sur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23
Ilocos Norte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22
La Union	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3
Pangasinan	0.0	0.0	0.0	0.0	3.0	12.9	0.0	101
Bulacan	0.0	0.0	0.0	0.0	0.0	19.1	4.8	21
Occidental Mindoro	28.0	5.4	8.6	1.1	12.9	0.0	0.0	93
Visayas	***0.0***	***0.0***	***2.9***	***0.0***	***0.0***	***0.0***	***4.9***	***102***
Iloilo	0.0	0.0	0.0	0.0	0.0	0.0	10.0	30
Guimaras	0.0	0.0	4.6	0.0	0.0	0.0	0.0	44
Negros Occidental	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17
Negros Oriental	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6
Cebu	0.0	0.0	20.0	0.0	0.0	0.0	40.0	5
Mindanao	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***10***
Misamis Oriental	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6
General Santos	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Zamboanga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3
Total	**6.9**	**1.3**	**2.9**	**0.3**	**4.0**	**4.5**	**1.6**	**375**

Table 5-17e. Percent distribution of salt producers by destination of raw salt produced (Part 4 – Regions Eastern Visayas, Zamboanga Peninsula , Davao, SOCKKSARGEN and Northern Mindanao)

Province	Iloilo	Guimaras	Aklan	Negros Occidental	Negros Oriental	Cebu	Bohol	Leyte	Samar	Davao	Misamis Oriental	General Santos	Zamboanga	Total
Luzon	***6.8***	***0.0***	***0.4***	***0.4***	***0.0***	***4.9***	***0.4***	***1.5***	***0.4***	***0.4***	***0.0***	***0.0***	***0.8***	***263***
Ilocos Sur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23
Ilocos Norte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22
La Union	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3
Pangasinan	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	101
Bulacan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21
Occidental Mindoro	18.3	0.0	1.1	1.1	0.0	14.0	1.1	0.0	1.1	1.1	0.0	0.0	2.2	93
Visayas	***34.3***	***2.9***	***2.0***	***44.1***	***3.9***	***1.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***102***
Iloilo	60.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30
Guimaras	36.4	6.8	2.3	70.4	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44
Negros Occidental	0.0	0.0	0.0	76.5	5.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17
Negros Oriental	0.0	0.0	0.0	16.7	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6
Cebu	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5
Mindanao	***0.0***	***0.02***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***50.0***	***10.0***	***10.0***	***10***
Misamis Oriental	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	83.3	0.0	0.0	6
General Santos	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	1
Zamboanga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	3
Total	**14.1**	**0.8**	**0.8**	**12.3**	**1.1**	**3.7**	**0.3**	**1.1**	**0.3**	**0.3**	**1.3**	**0.3**	**0.8**	**375**

Table 5-18. Frequency and percent distribution of salt producers by practice of iodizing raw salt per province*

Province	Iodizing		Not iodizing		Total
	n	%	n	%	
Luzon	***41***	***15.6***	***222***	***84.4***	***263***
Ilocos Sur	5	21.7	18	78.3	23
Ilocos Norte	7	31.8	15	68.2	22
La Union	3	100.0	0	0.0	3
Pangasinan	21	20.8	80	79.2	101
Bulacan	0	0.0	21	100.0	21
Occidental Mindoro	5	5.4	88	94.6	93
Visayas	***13***	***12.8***	***89***	***87.3***	***102***
Iloilo	4	13.3	26	86.7	30
Guimaras	4	9.1	40	90.9	44
Negros Occidental	2	11.8	15	88.3	17
Negros Oriental	3	50.0	3	50.0	6
Cebu	0	0.0	5	100.0	5
Mindanao	***1***	***10.0***	***9***	***90.0***	***10***
Misamis Oriental	0	0.0	6	100.0	6
General Santos City	1	100.0	0	0.0	1
Zamboanga	0	0.0	3	100.0	3
Total	**55**	**14.7**	**320**	**85.3**	**375**

Annex 6. Methods of salt production

Solar Evaporation Method

Production starts as early as November and usually ends at May or whenever the wet season comes. The farm is divided into water reservoir, concentrating/evaporating ponds and crystallizing ponds or salt beds. Seawater is pumped into the water reservoir for storage for at least 1 week to 1 month for preliminary evaporation. While waiting for the water to achieve salinity, the salt beds are prepared by thoroughly cleaning and leveling the land because prior to the salt harvest season the salt beds are usually used as fishponds. When needed the salt beds are repaired by compacting the soil, leveling the land then spreading a layer of coarse sand. In some provinces, the sand is mixed with cement and/or "apog" to make the base stronger. Then the salt beds are covered with either broken red ceramic tiles, black stones, broken jars or plastic sheets. The tiles are pounded lightly to set and level it off the coarse sand while the plastic sheets are held together by wood.

From the water reservoir, the partially concentrated brine is transferred into the concentrating pond to allow further concentration. The brine is stored in the concentrating pond for at least 3 days to at most 2 weeks depending on the rate of evaporation. Next, it is transferred to another concentrating pond to allow evaporating for at least 1 to 2 days. The process is repeated (transfer of brine to concentrating ponds) until the water reaches the bailing wells or supply canals in between the salt beds. This process of transferring brine from one concentrating pond to another usually last from 4 days to 2 weeks depending on the number of concentrating ponds and salinity of the brine. The concentrated brine is stored in the bailing wells/supply canals until it is transferred to the salt beds to dry. The brine is moved from one pond to another using either a water pump or gravitational movement (the water gate is opened to allow the brine to flow). From the bailing wells or supply canals, the concentrated brine is transferred into the salt beds either by opening the water gate or by pouring the brine into the salt beds.

During peak season, salt is harvested daily, usually from 3 pm onwards, using either a wooden scraper, pvc pipes cut lengthwise, rubber slippers, coconut shell and other improvised non-metal material. The harvested salt are either placed in a woven basket/box or dumped directly on the side of the salt beds to allow further drying. The salt beds are immediately refilled with the concentrated brine after each harvest for the next day.

Cooking method

This method can be classified into two: the traditional method that is often used by the subsistence or small-scale producers and the modernized method that is the production process used by the medium to large scale producers.

The process starts with the preparation of the sand as filter for seawater to collect concentrated brine. First, sand from nearby bay is cleaned and leveled. Then seawater will be sprinkled on the sand for 2 to 6 days and then allowed to dry. The sun-dried sand will be collected and then transported to the production area. Other salt producers collect the

hardened soil of dry fishponds or from the crust of the salty sands left by the receding tide at nearby bay.

The sand is transferred either into a wooden box called “kalungkong” or a man-made shallow well made from cement with catchments of either plastic basin, clay (“burnay”) or metal container underneath to catch the dripping brine. Seawater, either previously stored in a man-made well or fetched directly from the nearby sea, is repeatedly poured on the sand filter until enough brine is collected for cooking. The brine is poured into a “kawa” or a steel drum cut into two then cooked using a stove made from hardened soil and clay and firewood as fuel.

In the modified method, no soil is used as filter. Seawater is collected from the nearby sea and stored in a square-shaped water reservoir made of cement. An improvised net is used to filter dirt and other matter from the seawater being transferred to the water reservoir. Rock salt, purchased from salt traders, is dissolved in the water reservoir. The prepared brine is either pumped or transferred manually on steel pans for cooking. Rice husks or “ipa” is use as fuel.

When the heated brine starts to boil, the scum forming on top are scraped using either a fish net or a coconut shell with handle. This is done to rid the brine of dirt and thus produce a cleaner salt. Cooking of the brine usually lasts for 5 to 20 hours, depending on the quantity of the brine in the pans and the heat from the used fuel. The cooked salt is then transferred into a basket or “tiklis/kuribot” and allowed to drip. For salt producers who still use the traditional method of brine concentration, production usually starts on January and ends on May. On the other hand, salt producers using imported rock salt produces salt the whole year.

Salt producers from La Union and Pangasinan also use fresh water (“tubig tabang”) to dissolve the rock salt. Water is pumped to a water reservoir then rock salt is added, dissolved and allowed to stand for at most 1 day.

Annex 7. Detailed results of the survey among salt importers/traders

Table 7-1. Frequency and percent distribution of salt importers/traders by years operational per province

Province	<= 10 years		>10 and <=25 years		>25 and <=50 years		Total
	n	%	n	%	n	%	
Luzon	***7***	***50.0***	***3***	***21.4***	***4***	***28.6***	***14***
La Union	1	100.0	0	0.0	0	0.0	1
Pangasinan	1	20.0	3	60.0	1	20.0	5
Batangas	2	100.0	0	0.0	0	0.0	2
Occidental Mindoro	2	66.7	0	0.0	1	33.3	3
Metro Manila	1	33.3	0	0.0	2	66.7	3
Visayas	***5***	***33.3***	***7***	***46.7***	***3***	***20.0***	***15***
Iloilo	0	0.0	1	50.0	1	50.0	2
Guimaras	0	0.0	3	100.0	0	0.0	3
Negros Occidental	3	50.0	2	33.3	1	16.7	6
Cebu	2	50.0	1	25.0	1	25.0	4
Mindanao	***5***	***62.5***	***2***	***25.0***	***1***	***12.5***	***8***
Misamis Oriental	1	50.0	1	50.0	0	0.0	2
Davao	1	33.3	1	33.3	1	33.3	3
General Santos City	1	100.0	0	0.0	0	0.0	1
Zamboanga	2	100.0	0	0.0	0	0.0	3
TOTAL	**17**	**46.0**	**12**	**32.4**	**8**	**21.6**	**37***

*2 respondents indicated unknown

Table 7-2. Frequency and percent distribution of salt traders/importers by registration status per province

Province	Not registered		Yes, document shown		Yes, document not shown		Total
	n	%	n	%	n	%	
Luzon	***2***	***13.3***	***6***	***40.0***	***7***	***46.7***	***15***
La Union	0	0.0	1	100.0	0	0.0	1
Pangasinan	0	0.0	2	40.0	3	60.0	5
Batangas	0	0.0	0	0.0	2	100.0	2
Occidental Mindoro	2	50.0	0	0.0	2	50.0	4
Manila	0	0.0	3	100.0	0	0.0	3
Visayas	***1***	***6.7***	***4***	***26.7***	***10***	***66.7***	***15***
Iloilo	0	0.0	0	0.0	2	100.0	2
Guimaras	0	0.0	1	33.3	2	66.7	3
Negros Occidental	0	0.0	2	33.3	4	66.7	6
Cebu	1	25.0	0	0.0	3	75.0	4
Mindanao	***1***	***11.1***	***3***	***33.3***	***5***	***55.6***	***9***
Misamis Oriental	0	0.0	1	50.0	1	50.0	2
Davao	1	33.3	1	33.3	1	33.3	3
General Santos City	0	0.0	0	0.0	1	100.0	1
Zamboanga	0	0.0	1	33.3	2	66.7	3
TOTAL	**4**	**10.3**	**13**	**33.3**	**22**	**56.4**	**39**

Table 7-3. Frequency and percent distribution of salt traders/importers by status of license to operate per province

Province	Not licensed		Yes, documents shown		Yes, documents not shown		Total
	n	%	n	%	n	%	
Luzon	***5***	***33.3***	***1***	***6.7***	***9***	***60.0***	***15***
La Union	1	0.0	0	0.0	0	0.0	1
Pangasinan	2	40.0	0	0.0	3	60.0	5
Batangas	0	0.0	0	0.0	2	100.0	2
Occidental Mindoro	1	25.0	0	0.0	3	75.0	4
Manila	1	33.3	1	33.3	1	33.3	3
Visayas	***3***	***20.0***	***2***	***13.3***	***10***	***66.7***	***15***
Iloilo	0	0.0	0	0.0	2	100.0	2
Guimaras	0	0.0	1	33.3	2	66.7	3
Negros Occidental	3	50.0	0	0.0	3	50.0	6
Cebu	0	0.0	1	25.0	3	75.0	4
Mindanao	***3***	***33.3***	***2***	***22.2***	***4***	***44.4***	***9***
Misamis Oriental	0	0.0	1	50.0	1	50.0	2
Davao	2	66.7	0	66.7	1	33.3	3
General Santos City	0	0.0	0	0.0	1	100.0	1
Zamboanga	1	33.3	1	33.3	1	33.3	3
TOTAL	**11**	**28.2**	**5**	**12.8**	**23**	**59.0**	**39**

Table 7-4. Frequency and percent distribution of salt importers/traders by type of imported/traded salt per province

Province	Non-iodized		Iodized		Both		Total
	n	%	n	%	n	%	
Luzon	***5***	***33.3***	***4***	***26.7***	***6***	***40.0***	***15***
La Union	0	0.0	0	0.0	1	100.0	1
Pangasinan	0	0.0	1	20.0	4	80.0	5
Batangas	1	50.0	0	0.0	1	50.0	2
Occidental Mindoro	4	100.0	0	0.0	0	0.0	4
Manila	0	0.0	3	100.0	0	0.0	3
Visayas	***7***	***46.7***	***5***	***33.3***	***3***	***20.0***	***15***
Iloilo	0	0.0	2	100.0	0	0.0	2
Guimaras	3	100.0	0	0.0	0	0.0	3
Negros Occidental	2	33.3	3	50.0	1	16.7	6
Cebu	2	50.0	0	0.0	2	50.0	4
Mindanao	***4***	***44.4***	***4***	***44.4***	***1***	***11.1***	***9***
Misamis Oriental	1	50.0	1	50.0	0	0.0	2
Davao	1	33.3	2	66.7	0	0.0	3
General Santos City	1	100.0	0	0.0	0	0.0	1
Zamboanga	1	33.3	1	33.3	1	33.3	3
TOTAL	**16**	**41.0**	**13**	**33.3**	**10**	**25.6**	**39**

Table 7-5a. Frequency and percent distribution of salt importers/traders by source of traded non-iodized salt per province*

Province	Philippines		Australia		China		Thailand		Total+
	n	%	n	%	n	%	n	%	
Luzon	***8***	***72.7***	***4***	***36.4***	***0***	***0.0***	***0***	***0.0***	***11***
La Union	0	0.0	1	100.0	0	0.0	0	0.0	1
Pangasinan	4	100.0	1	25.0	0	0.0	0	0.0	4
Batangas	0	0.0	2	100.0	0	0.0	0	0.0	2
Occidental Mindoro	4	100.0	0	0.0	0	0.0	0	0.0	4
Visayas	***8***	***80.0***	***2***	***20.0***	***1***	***10.0***	***1***	***10.0***	***10***
Guimaras	3	100.0	0	0.0	0	0.0	0	0.0	3
Negros Occidental	2	66.7	1	33.3	1	33.3	1	33.3	3
Cebu	3	75.0	1	25.0	0	0.0	0	0.0	4
Mindanao	***1***	***20.0***	***4***	***80.0***	***0***	***0.0***	***0***	***0.0***	***4***
Misamis Oriental	0	0.0	1	50.0	0	0.0	0	0.0	1
Davao	0	0.0	1	33.3	0	0.0	0	0.0	1
General Santos City	0	0.0	1	100.0	0	0.0	0	0.0	1
Zamboanga	1	100.0	1	100.0	0	0.0	0	0.0	1
TOTAL	**17**	**65.4**	**10**	**38.5**	**1**	**3.9**	**1**	**3.9**	**26**

*Multiple responses

+Limited to respondents purchasing non-iodized salt; 1 respondent indicated unknown

Table 7-5b. Frequency and percent distribution of salt importers/traders by source of traded iodized salt per province*

Province	Philippines		Australia		China		Total+
	n	%	n	%	n	%	
Luzon	***8***	***80.0***	***3***	***30.0***	***1***	***10.0***	***10***
La Union	1	100.0	0	0.0	0	0.0	1
Pangasinan	4	80.0	2	40.0	0	0.0	5
Batangas	0	0.0	0	0.0	1	100.0	1
Manila	3	100.0	1	33.3	0	0.0	3
Visayas	***7***	***100.0***	***0***	***0.0***	***1***	***14.3***	***7***
Iloilo	2	100.0	0	0.0	0	0.0	2
Negros Occidental	4	100.0	0	0.0	1	25.0	4
Cebu	1	100.0	0	0.0	0	0.0	1
Mindanao	***4***	***100.0***	***0***	***0.0***	***0***	***0.0***	***4***
Misamis Oriental	1	100.0	0	0.0	0	0.0	1
Davao	2	100.0	0	0.0	0	0.0	2
Zamboanga	1	100.0	0	0.0	0	0.0	1
TOTAL	**18**	**85.7**	**3**	**14.3**	**2**	**9.5**	**21**

*Multiple responses

+2 respondents indicated "unknown"; limited to respondents purchasing iodized salt

Table 7-6a. Frequency and percent distribution of salt importers/traders by form of purchased non-iodized salt per province*

Province	Coarse		Fine		Total**
	n	%	n	%	
Luzon	***10***	***90.9***	***3***	***27.3***	***11***
La Union	1	0.0	0	0.0	1
Pangasinan	4	100.0	1	25.0	4
Batangas	1	0.0	1	50.0	2
Occidental Mindoro	4	100.0	1	25.0	4
Visayas	***10***	***100.0***	***2***	***20.0***	***10***
Guimaras	3	100.0	1	33.3	3
Negros Occidental	3	100.0	0	0.0	3
Cebu	4	100.0	1	25.0	4
Mindanao	***5***	***100.0***	***0***	***0.0***	***5***
Misamis Oriental	1	100.0	0	0.0	1
Davao	1	100.0	0	0.0	1
General Santos City	1	100.0	0	0.0	1
Zamboanga	2	100.0	0	0.0	2
TOTAL	**25**	**96.2**	**5**	**19.2**	**26**

*Multiple responses
**Limited to respondents purchasing non-iodized salt

Table 7-6b. Frequency and percent distribution of salt importers/traders by form of purchased iodized salt per province

Province	Fine		Coarse		Total*
	n	%	n	%	
Luzon	***9***	***90.0***	***1***	***10.0***	***10***
La Union	1	100.0	0	0.0	1
Pangasinan	5	100.0	0	0.0	5
Batangas	0	0.0	1	100.0	1
Manila	3	100.0	0	0.0	3
Visayas	***6***	***75.0***	***2***	***25.0***	***8***
Iloilo	1	50.0	1	50.0	2
Negros Occidental	3	75.0	1	25.0	4
Cebu	2	100.0	0	0.0	2
Mindanao	***3***	***60.0***	***2***	***40.0***	***5***
Misamis Oriental	1	100.0	0	0.0	1
Davao	1	50.0	1	0.0	2
Zamboanga	1	50.0	1	50.0	2
TOTAL	**18**	**78.3**	**5**	**21.7**	**23**

*Limited to respondents purchasing iodized salt

Table 7-7a. Frequency and percent distribution of salt importers/traders by use of traded non-iodized salt per province*

Province	Human consumption		Food processing		Industrial		Animal		Total+
	n	%	n	%	n	%	n	%	
Luzon	***7***	***63.6***	***5***	***45.5***	***2***	***18.2***	***3***	***27.3***	***11***
La Union	0	0.0	0	0.0	1	100.0	0	0.0	1
Pangasinan	3	75.0	2	50.0	0	0.0	1	25.0	4
Batangas	1	50.0	1	50.0	1	50.0	1	50.0	2
Occidental Mindoro	3	75.0	2	50.0	0	0.0	1	25.0	3
Visayas	***8***	***80.0***	***4***	***40.0***	***1***	***10.0***	***1***	***10.0***	***10***
Guimaras	3	100.0	2	66.7	0	0.0	0	0.0	3
Negros Occidental	3	100.0	0	0.0	1	33.3	0	0.0	3
Cebu	2	50.0	2	50.0	0	0.0	1	25.0	4
Mindanao	***4***	***80.0***	***2***	***40.0***	***2***	***40.0***	***0***	***0.0***	***5***
Misamis Oriental	0	0.0	1	100.0	0	0.0	0	0.0	1
Davao	1	100.0	1	100.0	0	0.0	0	0.0	1
General Santos City	1	100.0	0	0.0	1	100.0	0	0.0	1
Zamboanga	2	100.0	0	0.0	1	50.0	0	0.0	2
TOTAL	**19**	**73.1**	**11**	**42.3**	**5**	**19.2**	**4**	**15.4**	**26**

*Multiple responses

+Limited to respondents trading non-iodized salt

Table 7-7b. Frequency and percent distribution of salt importers/traders by use of traded iodized salt per province

Province	Human consumption		Food processing		Animal		Total*
	n	%	n	%	n	%	
Luzon	***10***	***100.0***	***4***	***40.0***	***3***	***30.0***	***10***
La Union	1	100.0	0	0.0	0	0.0	1
Pangasinan	5	100.0	2	40.0	1	20.0	5
Batangas	1	100.0	1	100.0	1	100.0	1
Manila	3	100.0	1	33.3	1	33.3	3
Visayas	***8***	***100.0***	***3***	***37.5***	***0***	***0.0***	***8***
Iloilo	2	100.0	1	50.0	0	0.0	2
Negros Occidental	4	100.0	1	25.0	0	0.0	4
Cebu	2	100.0	1	50.0	0	0.0	2
Mindanao	***5***	***100.0***	***2***	***40.0***	***0***	***0.0***	***5***
Misamis Oriental	1	100.0	0	0.0	0	0.0	1
Davao	2	100.0	1	50.0	0	0.0	2
Zamboanga	2	100.0	1	50.0	0	0.0	2
TOTAL	**23**	**100.0**	**9**	**39.1**	**3**	**13.0**	**23**

*Limited to respondents purchasing iodized salt

Table 7-8a. Frequency and percent distribution of salt importers/traders by quantity (metric tons) of purchased non-iodized salt per province*

Province	<=2 MT		>2 & <=300 MT		>300 & <2,000 MT		>2,000 MT		Total
	n	%	n	%	n	%	n	%	
Luzon	***2***	***22.2***	***4***	***44.4***	***3***	***33.3***	***0***	***0.0***	***9***
La Union	0	0.0	1	100.0	0	0.0	0	0.0	1
Pangasinan	2	50.0	0	0.0	2	50.0	0	0.0	4
Batangas	0	0.0	1	100.0	0	0.0	0	0.0	1
Occidental Mindoro	0	33.3	2	66.3	1	33.3	0	0.0	3
Visayas	***1***	***12.5***	***3***	***37.5***	***3***	***50.0***	***1***	***12.5***	***8***
Guimaras	1	50.0	0	0.0	1	50.0	0	0.0	2
Negros Occidental	0	0.0	1	33.3	1	33.3	1	33.3	3
Cebu	0	0.0	2	66.7	1	33.3	0	0.0	3
Mindanao	***0***	***0.0***	***1***	***20.0***	***0***	***0.0***	***4***	***80.0***	***5***
Misamis Oriental	0	0.0	0	0.0	0	0.0	1	100.0	1
Davao	0	0.0	0	0.0	0	0.0	1	100.0	1
General Santos City	0	0.0	0	0.0	0	0.0	1	100.0	1
Zamboanga	0	0.0	1	50.0	0	0.0	1	50.0	2
TOTAL	**3**	**13.6**	**8**	**36.4**	**6**	**27.3**	**5**	**22.7**	**22**

*Limited to respondents purchasing non-iodized salt
[+]4 respondents indicated unknown

Table 7-8b. Frequency and percent distribution of salt importers/traders by quantity (metric tons) of purchased iodized salt per province*

Province	<=2 MT		>2 & <=300 MT		>300 & <2,000 MT		>2,000 MT		Total[+]
	n	%	n	%	n	%	n	%	
Luzon	***1***	***12.5***	***5***	***62.5***	***1***	***12.5***	***2***	***25.0***	***8***
La Union	0	0.0	1	100.0	0	0.0	0	0.0	1
Pangasinan	1	25.0	1	25.00	1	25.0	1	25.0	4
Batangas	0	0.0	1	100.0	0	0.0	1	100.0	1
Manila	0	0.0	2	100.0	0	0.0	0	0.0	2
Visayas	***0***	***0.0***	***3***	***37.5***	***4***	***50.0***	***1***	***12.5***	***8***
Iloilo	0	0.0	0	0.0	2	100.0	0	0.0	2
Negros Occidental	0	0.0	2	50.0	2	50.0	0	0.0	4
Cebu	0	0.0	1	50.0	0	0.0	1	50.0	2
Mindanao	***0***	***0.0***	***4***	***80.0***	***0***	***0.0***	***1***	***20.0***	***5***
Misamis Oriental	0	0.0	1	100.0	0	0.00	0	0.0	1
Davao	0	0.0	2	100.0	0	0.0	0	0.0	2
Zamboanga	0	0.0	1	50.0	0	0.0	1	50.0	2
TOTAL	**1**	**4.8**	**12**	**57.1**	**5**	**23.8**	**3**	**14.3**	**21**

*Limited to respondents purchasing iodized salt
[+]2 respondents indicated unknown

Table 7-9. Frequency and percent distribution of salt importers/traders by availability of warehouse for storage of traded salt per province

Province	Available		Not available		Total*
	n	%	n	%	
Luzon	***10***	***71.4***	***4***	***28.6***	***14***
La Union	1	100.0	0	0.00	1
Pangasinan	2	40.0	3	60.00	5
Batangas	2	100.0	0	0.00	2
Occidental Mindoro	2	66.7	1	25.00	3
Manila	3	100.0	0	0.00	3
Visayas	***14***	***93.3***	***1***	***6.7***	***15***
Iloilo	2	100.0	0	0.0	2
Guimaras	3	100.0	0	0.0	3
Negros Occidental	5	83.3	1	16.7	6
Cebu	4	100.0	0	0.0	4
Mindanao	***5***	***55.6***	***4***	***44.4***	***9***
Misamis Oriental	0	0.0	2	100.0	2
Davao	3	100.0	0	0.0	3
General Santos City	0	0.0	1	100.0	1
Zamboanga	2	66.7	1	33.3	3
TOTAL	**29**	**76.3**	**9**	**23.7**	**38**

*1 respondent indicated unknown

Table 7-10. Frequency and percent distribution of salt importers/traders by storage containers/packaging used in storing traded non-iodized salt per province

Province	Directly on floor		Sack		Both		Total*
	n	%	n	%	n	%	
Luzon	***1***	***9.1***	***10***	***90.0***	***0***	***0.0***	***11***
La Union	0	0.0	1	0	0	0.0	1
Pangasinan	0	0.0	4	100.0	0	0.0	4
Batangas	1	50.0	1	50.0	0	0.0	2
Occidental Mindoro	0	0.0	4	100.0	0	0.0	4
Visayas	***2***	***20.0***	***6***	***60.0***	***2***	***20.0***	***10***
Guimaras	1	33.3	1	33.3	1	33.3	3
Negros Occidental	0	0.0	2	66.7	1	33.3	3
Cebu	1	25.0	3	75.0	0	0.0	4
Mindanao	***4***	***80.0***	***1***	***20.0***	***0***	***0.0***	***5***
Misamis Oriental	1	100.0	0	0.0	0	0.0	1
Davao	1	100.0	0	0.0	0	0.0	1
General Santos City	1	100.0	0	0.0	0	0.0	1
Zamboanga	1	100.0	1	50.0	0	0.0	2
TOTAL	**7**	**26.9**	**17**	**65.4**	**2**	**7.7**	**26**

*Limited to respondents trading non-iodized salt

Table 7-11a. Frequency and percent distribution of salt importers/traders by practice of repacking non-iodized salt before selling per province

Province	Yes		No		Total*
	n	%	n	%	
Luzon	***4***	***36.4***	***7***	***63.6***	***11***
La Union	1	100.0	0	0.0	1
Pangasinan	1	25.0	3	75.0	4
Batangas	2	100.0	0	0.0	2
Occidental Mindoro	0	0.0	4	100.0	4
Visayas	***2***	***22.2***	***7***	***77.8***	***9***
Guimaras	0	66.7	3	100.0	3
Negros Occidental	1	33.3	2	66.7	3
Cebu	1	33.3	2	66.7	3
Mindanao	***2***	***50.0***	***1***	***50.0***	***4***
Misamis Oriental	0	0.0	1	100.0	1
Davao	1	100.0	0	0.0	1
General Santos City	1	100.0	0	0.0	1
Zamboanga	0	0.0	1	100.0	1
TOTAL	**8**	**33.3**	**16**	**66.7**	**24**

*2 respondents reported not selling non-iodized salt

Table 7-11b. Frequency and percent distribution of salt importers/traders by practice of repacking iodized salt before selling per province

Province	Yes		No		Total*
	n	%	n	%	
Luzon	***4***	***33.3***	***8***	***66.7***	***12***
La Union	1	100.0	0	0.0	1
Pangasinan	1	20.0	4	80.0	5
Batangas	1	50.0	1	50.0	2
Occidental Mindoro	1	100.0	0	0.0	1
Manila	0	0.0	3	100.0	3
Visayas	***2***	***22.2***	***7***	***77.8***	***9***
Iloilo	0	0.0	2	100.0	2
Negros Occidental	1	25.0	3	75.0	4
Cebu	1	33.3	2	66.7	3
Mindanao	***5***	***62.5***	***3***	***37.5***	***8***
Misamis Oriental	0	0.0	1	100.0	1
Davao	2	66.7	1	33.3	3
General Santos City	1	100.0	0	0.0	1
Zamboanga	2	66.7	1	33.3	3
TOTAL	**11**	**37.9**	**18**	**62.1**	**29**

*6 respondents reported selling iodized salt after iodizing their non-iodized salt

Table 7-12a. Frequency and percent distribution of salt importers/traders by packaging used when repacking non-iodized salt before selling per province

Province	Sack		Plastic bag		Total*
	n	%	n	%	
Luzon	***3***	***75.0***	***1***	***25.0***	***4***
La Union	0	0.0	1	100.0	1
Pangasinan	1	100.0	0	0.0	1
Batangas	2	100.0	0	0.0	2
Visayas	***1***	***50.0***	***1***	***50.0***	***2***
Negros Occidental	1	100.0	0	0.0	1
Cebu	0	0.0	1	100.0	1
Mindanao	***2***	***100.0***	***0***	***0.0***	***2***
Davao	1	100.0	0	0.0	1
General Santos City	1	100.0	0	0.0	1
TOTAL	**6**	**75.0**	**2**	**25.0**	**8**

*Limited to respondents repacking non-iodized salt before selling

Table 7-12b. Frequency and percent distribution of salt importers/traders by packaging used when repacking iodized salt before selling per province

Province	Sack		Plastic bag		Both		Total*
	n	%	n	%	n	%	
Luzon	***2***	***50.0***	***2***	***50.0***	***0***	***0.0***	***4***
La Union	1	100.0	0	0.0	0	0.0	1
Pangasinan	0	0.0	1	100.0	0	0.0	1
Batangas	0	0.0	1	100.0	0	0.0	1
Occidental Mindoro	1	100.0	0	0.0	0	0.0	1
Visayas	***1***	***50.0***	***0***	***0.0***	***1***	***50.0***	***2***
Negros Occidental	1	50.0	0	0.0	0	0.0	1
Cebu	0	0.0	0	0.0	1	100.0	1
Mindanao	***3***	***60.0***	***1***	***20.0***	***1***	***20.0***	***5***
Davao	1	50.0	1	50.0	0	0.0	2
General Santos City	1	100.0	0	0.0	0	0.0	1
Zamboanga	1	100.0	0	0.0	1	50.0	2
TOTAL	**6**	**54.6**	**3**	**27.3**	**2**	**9.1**	**11**

*Limited to respondents repacking iodized salt before selling

Table 7-13. Frequency and percent distribution of salt importers/traders by completeness of information on the packaging label of non-iodized salt per province*

Province	Complete		No label		Incomplete		Total+
	n	%	n	%	n	%	
Luzon	***1***	***10.0***	***7***	***70.0***	***2***	***20.0***	***10***
La Union	0	0.0	1	100.0	0	0.0	1
Pangasinan	0	0.0	4	100.0	0	0.0	4
Batangas	0	0.0	0	0.0	2	100.0	2
Occidental Mindoro	1	33.3	2	66.7	0	0.0	3
Visayas	***1***	***12.5***	***5***	***62.5***	***2***	***25.0***	***8***
Guimaras	0	0.0	2	100.0	0	0.0	2
Negros Occidental	1	33.3	2	66.7	0	0.0	3
Cebu	0	0.0	1	33.3	2	66.7	3
Mindanao	***2***	***50.0***	***2***	***50.0***	***0***	***0.0***	***4***
Misamis Oriental	1	100.0	0	0.0	0	0.0	1
Davao	0	0.0	1	100.0	0	0.0	1
General Santos City	0	0.0	1	100.0	0	0.0	1
Zamboanga	1	100.0	0	0.0	0	0.0	1
TOTAL	**4**	**18.2**	**14**	**63.6**	**4**	**18.2**	**22**

*Label must include at least company name, address/contact numbers and manufacturing date
+Limited to respondents selling non-iodized salt; 2 respondents indicated no answer

Table 7-14a. Frequency and percent distribution of salt importers/traders by quantity of non-iodized salt sold (metric tons) in the previous year per province*

Province	<= 10 MT		> 10 & <=100 MT		> 100 & <=500 MT		> 500 MT		Total+
	n	%	n	%	n	%	n	%	
Luzon	***3***	***37.5***	***1***	***12.5***	***2***	***25.5***	***2***	***25.0***	***8***
La Union	0	0.0	0	0.0	1	100.0	0	0.0	1
Pangasinan	2	50.0	0	0.0	1	25.0	1	25.0	4
Occidental Mindoro	1	33.3	1	33.3	0	0.0	1	33.3	3
Visayas	***1***	***14.3***	***2***	***28.6***	***1***	***14.3***	***3***	***42.9***	***7***
Guimaras	0	0.0	0	0.0	1	50.0	1	50.0	2
Negros Occidental	0	0.0	1	33.3	0	0.0	2	66.7	3
Cebu	1	50.0	1	50.0	0	0.0	0	0.0	4
Mindanao	***0***	***0.0***	***0***	***0.0***	***0***	***0.0***	***4***	***100.0***	***4***
Misamis Oriental	0	0.0	0	0.0	0	0.0	1	100.0	1
Davao	0	0.0	0	0.0	0	0.0	1	100.0	1
General Santos City	0	0.0	0	0.0	0	0.0	1	100.0	1
Zamboanga	0	0.0	0	0.0	0	0.0	1	100.0	1
TOTAL	**4**	**21.1**	**3**	**15.8**	**3**	**15.8**	**9**	**47.4**	**19**

*Limited to respondents trading non-iodized salt
+5 respondents indicated no answer

Table 7-14b. Frequency and percent distribution of salt importers/traders by quantity of iodized salt sold (metric tons) in the previous year per province*

Province	<= 10 MT		> 10 & <=100 MT		> 100 & <=500 MT		> 500 MT		Total+
	n	%	n	%	n	%	n	%	
Luzon	***3***	***33.3***	***2***	***22.2***	***2***	***22.2***	***2***	***22.2***	***9***
La Union	0	0.0	0	0.0	1	100.0	0	0.0	1
Pangasinan	2	50.0	0	0.0	1	25.0	1	25.0	4
Batangas	0	0.0	1	100.0	0	0.0	0	0.0	1
Metro Manila	1	33.3	1	33.3	0	0.0	1	33.3	3
Visayas	***2***	***28.6***	***2***	***28.6***	***2***	***28.6***	***1***	***14.3***	***7***
Iloilo	0	0.0	0	0.0	1	50.0	1	50.0	2
Negros Occidental	1	33.3	1	33.3	1	33.3	0	0.0	3
Cebu	1	50.0	1	50.0	0	0.0	0	0.0	2
Mindanao	***0***	***0.0***	***4***	***50.0***	***1***	***12.5***	***3***	***37.5***	***8***
Misamis Oriental	0	0.0	1	50.0	0	0.0	1	50.0	2
Davao	0	0.0	1	50.0	1	50.0	0	0.0	2
General Santos City	0	0.0	0	0.0	0	0.0	1	100.0	1
Zamboanga	0	0.0	2	66.7	0	0.0	1	33.3	3
TOTAL	**5**	**20.8**	**8**	**33.3**	**5**	**20.8**	**6**	**25.0**	**24**

*Limited to respondents trading iodized salt
+5 respondents indicated no answer

Table 7-15a. Frequency and percent distribution of salt importers/traders by selling price of non-iodized salt per kilo (as computed) salt during the survey per province*

Province	<=5.00 / kg		> 5.00 / kg		Total+
	n	%	n	%	
Luzon	***0***	***0.0***	***1***	***100.0***	***1***
Pangasinan	0	0.0	1	100.0	1
Visayas	***3***	***75.0***	***1***	***25.0***	***4***
Guimaras	1	100.0	0	0.0	1
Cebu	2	66.7	1	33.3	3
Mindanao	***3***	***100.0***	***0***	***0.0***	***3***
Misamis Oriental	1	100.0	0	0.0	1
Davao	1	100.0	0	0.0	1
General Santos	1	100.0	0	0.0	1
TOTAL	**6**	**75.0**	**2**	**25.0**	**8**

*Limited to respondents selling non-iodized salt
+16 respondents indicated no answer

Table 7-15b. Frequency and percent distribution of salt importers/traders by selling price of iodized salt per kilo (as computed) salt during the survey per province*

Province	<=5.00 / kg		> 5 to <= 10.00 /kg		> 10.00 / kg		Total+
	n	%	n	%	n	%	
Luzon	***1***	***11.1***	***6***	***66.7***	***2***	***22.2***	***9***
Pangasinan	0	0.0	5	100.0	0	0.0	5
Occidental Mindoro	0	0.0	0	0.0	1	100.0	1
Manila	1	33.3	1	33.3	1	33.3	3
Visayas	***7***	***70.0***	***2***	***20.0***	***1***	***10.0***	***9***
Iloilo	2	100.0	0	0.0	0	0.0	2
Negros Occidental	3	60.0	2	40.0	0	0.0	5
Cebu	2	66.7	0	0.0	1	33.3	3
Mindanao	***6***	***75.0***	***2***	***25.0***	***0***	***0.0***	***9***
Misamis Oriental	2	100.0	0	0.0	0	0.0	2
Davao	3	100.0	0	0.0	0	0.0	3
General Santos City	1	100.0	0	0.0	0	0.0	1
Zamboanga	0	0.0	2	100.0	0	0.0	2
TOTAL	**14**	**51.9**	**10**	**37.0**	**3**	**11.1**	**27**

*Limited to respondents selling iodized salt
+2 respondents indicated no answer

Table 7-16a. Frequency and percent distribution of salt importers/traders by destination of non-iodized salt sold per province*

Province	Within the area		Metro Manila		Luzon		Visayas		Mindanao		Total+
	n	%	n	%	n	%	n	%	n	%	
Luzon	***2***	***18.2***	***2***	***18.2***	***6***	***54.5***	***1***	***9.1***	***1***	***9.1***	***11***
La Union	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0	1
Pangasinan	1	25.00	0	0.0	4	100.0	0	0.0	0	0.0	4
Batangas	0	0.0	1	50.0	1	50.0	1	50.0	1	50.0	2
Occidental Mindoro	0	0.0	1	25.0	1	25.0	0	0.0	0	0.0	4
Visayas	***4***	***44.4***	***0***	***0.0***	***0***	***0.0***	***5***	***55.6***	***1***	***11.1***	***9***
Guimaras	1	33.3	0	0.0	0	0.0	2	66.7	0	0.0	3
Negros Occidental	1	33.3	0	0.0	0	0.0	1	33.3	0	0.0	3
Cebu	3	100.0	0	0.0	0	0.0	2	66.7	1	33.3	3
Mindanao	***3***	***75.0***	***0***	***0.0***	***0***	***0.0***	***0***	***0.0***	***3***	***75.0***	***4***
Misamis Oriental	0	0.0	0	0.0	0	0.0	0	0.0	1	100.0	1
Davao	1	100.0	0	0.0	0	0.0	0	0.0	1	100.0	1
General Santos City	1	100.0	0	0.0	0	0.0	0	0.0	1	100.0	1
Zamboanga	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0	1
TOTAL	**9**	**37.5**	**2**	**8.3**	**6**	**25.0**	**6**	**25.0**	**5**	**20.8**	**24**

*Multiple responses
+Limited to respondents trading non-iodized salt

Table 7-16b. Percent distribution of salt importers/traders trading non-iodized salt by destination of non-iodized salt traded (Part I – Manila and Luzon provinces)

Province	Manila	La Union	Pangasinan	Tarlac	Cagayan	Isabela	Laguna	Marinduque	Total
Luzon	***18.2***	***9.1***	***9.1***	***9.1***	***27.3***	***27.3***	***9.1***	***9.1***	***11***
La Union	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Pangasinan	0.0	0.0	20.0	0.0	75.0	60.0	0.0	0.0	4
Batangas	50.0	0.0	0.0	50.0	0.0	0.0	50.0	0.0	2
Occidental Mindoro	25.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	4
Manila	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Visayas	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***10***
Iloilo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Guimaras	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3
Negros Occidental	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3
Cebu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4
Mindanao	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***5***
Misamis Oriental	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Davao	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
General Santos	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Zamboanga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
Total	**7.7**	**3.9**	**3.9**	**3.9**	**11.5**	**11.5**	**3.9**	**3.9**	**26**

Table 7-16c. Percent distribution of salt importers/traders by destination of non-iodized salt traded (Part 2 – Visayas and Mindanao provinces)

Province	Negros Occidental	Guimaras	Cebu	Samar	Leyte	Davao	Misamis Oriental	Cotabato	Butuan	Surigao	Zamboanga	Sultan Kudarat	Saranggani	Koronadal	General Santos	Total
Luzon	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***11***
La Union	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Pangasinan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4
Batangas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
Occidental Mindoro	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4
Manila	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Visayas	***20.0***	***10.0***	***30.0***	***10.0***	***10.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***10***
Iloilo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Guimaras	33.3	33.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3
Negros Occidental	16.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3
Cebu	0.0	0.0	75.0	25.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4
Mindanao	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***20.0***	***20.0***	***20.0***	***20.0***	***20.0***	***20.0***	***20.0***	***20.0***	***20.0***	***20.0***	***5***
Misamis Oriental	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Davao	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	33.3	33.3	0.0	0.0	0.0	0.0	0.0	1
General Santos	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	100.0	0.0	1
Zamboanga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	0.0	100.0	2
Total	**7.7**	**3.9**	**11.5**	**3.9**	**3.9**	**3.9**	**3.9**	**3.9**	**3.9**	**3.9**	**3.9**	**3.9**	**3.9**	**3.9**	**3.9**	**26**

Table 7-16d. Frequency and percent distribution of salt importers/traders by destination of iodized salt sold per province*

Province	Within the area		Luzon		Visayas		Mindanao		Total+
	n	%	n	%	n	%	n	%	
Luzon	***6***	***50.0***	***6***	***50.0***	***1***	***8.3***	***1***	***8.3***	***12***
La Union	1	100.0	0	0.0	0	0.0	0	0.0	1
Pangasinan	1	20.0	4	80.0	0	0.0	0	0.0	5
Batangas	0	0.0	2	100.0	1	50.0	1	50.0	2
Occidental Mindoro	1	100.0	0	0.0	0	0.0	0	0.0	1
Metro Manila	3	100.0	0	0.0	0	0.0	0	0.0	3
Visayas	***7***	***77.8***	***2***	***22.2***	***2***	***22.2***	***0***	***0.0***	***9***
Iloilo	2	100.0	1	50.0	0	0.0	0	0.0	2
Negros Occidental	2	50.0	1	25.0	2	50.0	0	0.0	4
Cebu	3	100.0	0	0.0	0	0.0	0	0.0	3
Mindanao	***7***	***87.5***	***0***	***0.0***	***0***	***0.0***	***2***	***25.0***	***8***
Misamis Oriental	1	100.0	0	0.0	0	0.0	1	100.0	1
Davao	2	66.7	0	0.0	0	0.0	1	33.3	3
General Santos City	1	100.0	0	0.0	0	0.0	0	0.0	1
Zamboanga	3	100.0	0	0.0	0	0.0	0	0.0	3
TOTAL	**20**	**69.0**	**8**	**27.6**	**3**	**10.3**	**3**	**10.3**	**29**

*Multiple responses

+Limited to respondents trading iodized salt

Table 7-16e. Percent distribution of salt importers/traders by destination of iodized salt traded (Part I – Manila and Luzon provinces)

Province	Manila	La Union	Pangasinan	Cagayan	Isabela	Nueva Vizcaya	Cavite	Occidental Mindoro	Oriental Mindoro	Total
Luzon	***26.7***	***10.0***	***10.0***	***30.0***	***30.0***	***10.0***	***10.0***	***10.0***	***0.0***	***10***
La Union	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Pangasinan	0.0	0.0	20.0	60.0	60.0	100.0	0.0	0.0	0.0	5
Batangas	50.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	1
Occidental Mindoro	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Manila	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3
Visayas	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***12.5***	*8*
Iloilo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	2
Guimaras	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Negros Occidental	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4
Cebu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
Mindanao	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	*5*
Misamis Oriental	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Davao	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
General Santos	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Zamboanga	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
Total	**10.3**	**4.4**	**4.4**	**13.0**	**13.0**	**4.4**	**4.4**	**4.4**	**4.4**	**23**

Table 7-16f. Percent distribution of salt importers/traders by destination of iodized salt traded (Part 2 – Visayas and Mindanao province)

Province	Negros Occidental	Iloilo	Cebu	Misamis Oriental	Compostela	Davao	Dipolog	Zamboanga	Total
Luzon	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***10***
La Union	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Pangasinan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5
Batangas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Occidental Mindoro	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Manila	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3
Visayas	***37.5***	***20.0***	***20.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	*8*
Iloilo	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	2
Guimaras	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Negros Occidental	75.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4
Cebu	0.0	0.0	75.0	0.0	0.0	0.0	0.0	0.0	2
Mindanao	***0.0***	***0.0***	***0.0***	***20.0***	***20.0***	***40.0***	***20.0***	***20.0***	*5*
Misamis Oriental	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	1
Davao	0.0	0.0	0.0	0.0	20.0	100.0	0.0	0.0	2
General Santos	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Zamboanga	0.0	0.0	0.0	0.0	0.0	0.0	50.0	50.0	2
Total	**13.0**	**7.7**	**7.7**	**4.4**	**4.4**	**8.7**	**4.4**	**4.4**	**23**

Table 7-17. Frequency and percent distribution of salt importers/traders by practice of iodizing non-iodized salt per province

Province	Iodize		Do not iodize		Total*
	n	%	n	%	
Luzon	***5***	***45.5***	***6***	***54.5***	***11***
La Union	0	0.0	1	100.0	1
Pangasinan	1	25.0	3	75.0	4
Batangas	2	100.0	0	0.0	2
Occidental Mindoro	2	50.0	2	50.0	4
Visayas	***7***	***70.0***	***3***	***30.0***	***10***
Guimaras	2	66.7	1	33.3	3
Negros Occidental	3	100.0	0	0.0	3
Cebu	2	50.0	2	50.0	4
Mindanao	***5***	***100.0***	***0***	***0.0***	***5***
Misamis Oriental	1	100.0	0	0.0	1
Davao	1	100.0	0	0.0	1
General Santos City	1	100.0	0	0.0	1
Zamboanga	2	100.0	0	0.0	2
TOTAL	**17**	**65.4**	**9**	**34.6**	**26**

*Limited to respondents who reported iodizing non-iodized salt

Annex 8. Detailed results of survey on Quality Assurance / Quality Control practices on salt iodization

Table 8-1. Frequency and percent distribution of respondents by familiarity with the guidelines on salt iodization per province

Province	Yes		No		Total*
	n	%	n	%	
Luzon	***42***	***89.4***	***5***	***10.6***	***47***
Ilocos Sur	4	66.7	2	33.3	6
Ilocos Norte	7	100.0	0	0.0	7
La Union	3	100.0	0	0.0	3
Pangasinan	20	90.9	2	9.1	22
Batangas	1	100.00	0	0.0	1
Occidental Mindoro	6	85.7	1	14.3	7
Manila	1	100.0	0	0.0	1
Visayas	***15***	***75.0***	***5***	***25.0***	***20***
Iloilo	2	50.0	2	50.0	4
Guimaras	5	83.3	1	16.7	6
Negros Occidental	4	80.0	1	20.0	5
Negros Oriental	3	100.0	0	0.0	3
Cebu	1	50.0	1	50.0	2
Mindanao	***5***	***83.3***	***1***	***16.7***	***6***
Misamis Oriental	1	100.0	0	0.0	1
Davao	1	100.0	0	0.0	1
General Santos City	1	50.0	1	50.0	2
Zamboanga	2	100.0	0	0.0	2
TOTAL	**62**	**84.9**	**11**	**15.1**	**73**

*1 respondent indicated no answer.

Table 8-2. Frequency and percent distribution of respondents by information source on the guidelines on salt iodization* per province

Province	Government		Own company		Media		Total[+]
	n	%	n	%	n	%	
Luzon	***38***	***92.7***	***3***	***7.3***	***1***	***2.4***	***41***
Ilocos Sur	4	100.0	0	0.0	0	0.0	4
Ilocos Norte	6	100.0	0	0.0	0	0.0	6
La Union	3	100.0	0	0.0	0	0.0	3
Pangasinan	19	95.0	1	5.0	1	5.0	20
Batangas	0	0.0	1	100.0	0	0.0	1
Occidental Mindoro	5	83.3	1	16.7	0	0.0	6
Manila	1	100.0	0	0.0	0	0.0	1
Visayas	***13***	***86.7***	***2***	***13.3***	***0***	***0.0***	***15***
Iloilo	2	100.0	0	0.0	0	0.0	2
Guimaras	5	100.0	0	0.0	0	0.0	5
Negros Occidental	4	100.0	0	0.0	0	0.0	4
Negros Oriental	2	66.7	1	33.3	0	0.0	3
Cebu	0	0.0	1	100.0	0	0.0	1
Mindanao	***3***	***60.0***	***3***	***60.0***	***0***	***0.0***	***6***
Misamis Oriental	1	100.0	0	0.0	0	0.0	1
Davao	1	100.0	1	100.0	0	0.0	1
General Santos City	0	0.0	1	100.0	0	0.0	1
Zamboanga	1	50.0	1	50.0	0	0.0	2
TOTAL	**54**	**88.5**	**8**	**13.1**	**1**	**1.6**	**61**

*Limited to respondents who reported familiarity with the salt iodization guidelines; multiple responses

[+]1 respondent cannot remember source of information on the salt iodization

Table 8-3. Frequency and percent distribution of respondents by availability of an operations manual per province

Province	Yes, documents shown		None*		Total
	n	%	n	%	
Luzon	***0***	***0.0***	***48***	***100.0***	***48***
Ilocos Sur	0	0.0	6	100.0	6
Ilocos Norte	0	0.0	7	100.0	7
La Union	0	0.0	3	100.0	3
Pangasinan	0	0.0	22	100.0	22
Batangas	0	0.0	0	0.0	2
Occidental Mindoro	0	0.0	7	100.0	7
Manila	0	0.0	0	0.0	1
Visayas	***1***	***5.0***	***19***	***95.0***	***20***
Iloilo	0	0.0	4	100.0	4
Guimaras	0	0.0	6	100.0	6
Negros Occidental	0	0.0	5	100.0	5
Negros Oriental	0	0.0	3	100.0	3
Cebu	1	50.0	1	50.0	2
Mindanao	***1***	***16.7***	***5***	***83.3***	***6***
Misamis Oriental	1	100.0	0	0.0	1
Davao	0	100.0	1	100.0	1
General Santos City	0	0.0	2	100.0	2
Zamboanga	0	0.0	2	100.0	2
TOTAL	**2**	**2.7**	**63**	**85.1**	**74**

*Includes respondents who reported to have an operations manual but failed to show the document during the survey

Table 8-4. Frequency and percent distribution of respondents by inspection of non-iodized salt for iodization per province

Province	Visual inspection		Check Certificate of Analysis		Moisture Analyzer		No inspection		Total*
	n	%	n	%	n	%	n	%	
Luzon	***25***	***54.4***	***1***	***2.2***	***1***	***2.2***	***19***	***41.3***	***46***
Ilocos Sur	2	33.3	0	0.0	0	0.0	4	66.7	6
Ilocos Norte	3	42.9	0	0.0	0	0.0	4	57.1	7
La Union	3	100.0	0	0.0	0	0.0	0	0.0	3
Pangasinan	12	54.6	0	0.0	0	0.0	10	45.4	22
Batangas	0	0.0	1	50.0	1	50.0	0	0.0	2
Occidental Mindoro	5	83.3	0	0.0	0	0.0	1	16.7	6
Visayas	***14***	***70.0***	***2***	***10.0***	***0***	***0.0***	***4***	***20.0***	***20***
Iloilo	3	75.0	0	0.0	0	0.0	1	25.0	4
Guimaras	5	83.3	0	0.0	0	0.0	1	16.7	6
Negros Occidental	3	60.0	1	20.0	0	0.0	1	20.0	5
Negros Oriental	2	66.7	0	0.0	0	0.0	1	33.3	3
Cebu	1	50.0	1	50.0	0	0.0	0	0.0	2
Mindanao	***6***	***100.0***	***0***	***0.0***	***0***	***0.0***	***0***	***0.0***	***6***
Misamis Oriental	1	100.0	0	0.0	0	0.0	0	0.0	1
Davao	1	100.0	0	0.0	0	0.0	0	0.0	1
General Santos City	2	100.0	0	0.0	0	0.0	0	0.0	2
Zamboanga	2	100.0	0	0.0	0	0.0	0	0.0	2
TOTAL	**45**	**62.5**	**3**	**4.2**	**1**	**1.4**	**23**	**31.9**	**72**

*1 respondent indicated no answer; 1 respondent purchased only non-iodized salt

Table 8-5. Frequency and percent distribution of respondents by availability of warehouse for non-iodized salt per province

Province	Yes*		No		Total+
	n	%	n	%	
Luzon	***31***	***66.0***	***16***	***34.0***	***47***
Ilocos Sur	2	33.3	4	66.7	6
Ilocos Norte	4	66.7	2	33.3	6
La Union	2	66.7	1	33.3	3
Pangasinan	14	63.6	8	36.4	22
Batangas	2	100.0	0	0.0	2
Occidental Mindoro	7	100.0	0	0.0	7
Manila	0	0.0	1	100.0	1
Visayas	***14***	***73.7***	***5***	***26.3***	***19***
Iloilo	2	50.0	2	50.0	4
Guimaras	5	83.3	1	16.7	6
Negros Occidental	4	80.0	1	20.0	5
Negros Oriental	2	100.0	0	0.0	2
Cebu	1	50.0	1	50.0	2
Mindanao	***4***	***66.7***	***2***	***33.3***	***6***
Misamis Oriental	1	100.0	0	0.0	1
Davao	1	100.0	0	0.0	1
General Santos City	1	50.0	1	50.0	2
Zamboanga	1	50.0	1	50.0	2
TOTAL	**49**	**68.1**	**23**	**31.9**	**72**

*Include respondents who used their office or house as warehouses

+2 respondents indicated no answer.

Table 8-6. Frequency and percent distribution of respondents by system of storage and retrieval for raw materials used for iodization per province

Province	First in, First out		Top/Front materials first		No system of storage/retrieval		Not applicable*		Total+
	n	%	n	%	n	%	n	%	
Luzon	***11***	***23.4***	***5***	***10.6***	***14***	***29.8***	***17***	***36.2***	***47***
Ilocos Sur	0	0.0	0	0.0	3	50.0	3	50.0	6
Ilocos Norte	1	16.7	1	16.7	3	50.0	1	16.7	6
La Union	1	33.3	0	0.0	1	33.3	1	33.3	3
Pangasinan	5	22.7	1	4.6	6	27.3	10	45.4	22
Batangas	2	100.0	0	0.0	0	0.0	0	0.0	2
Occidental Mindoro	2	28.6	3	42.9	1	14.3	1	14.3	7
Manila	0	0.0	0	0.0	0	0.0	1	100.0	1
Visayas	***3***	***15.0***	***7***	***35.0***	***7***	***35.0***	***3***	***15.0***	***20***
Iloilo	0	0.0	0	0.0	2	50.0	2	50.0	4
Guimaras	0	0.0	2	33.3	3	50.0	1	16.7	6
Negros Occidental	1	20.0	3	60.0	1	20.0	0	0.0	5
Negros Oriental	0	0.0	2	66.7	1	33.3	0	0.0	3
Cebu	2	100.0	0	0.0	0	0.0	0	0.0	2
Mindanao	***5***	***83.3***	***1***	***16.7***	***0***	***0.0***	***0***	***0.0***	***6***
Misamis Oriental	1	100.0	0	0.0	0	0.0	0	0.0	1
Davao	1	100.0	0	0.0	0	0.0	0	0.0	1
General Santos City	1	50.0	1	50.0	0	0.0	0	0.0	2
Zamboanga	2	100.0	0	0.0	0	0.0	0	0.0	2
TOTAL	**19**	**26.0**	**13**	**17.8**	**21**	**28.8**	**20**	**27.4**	**73**

*Not following any storage system because new material is bought only when no material is left in storage.

+1 respondent indicated no answer.

Table 8-7. Frequency and percent distribution of respondents by type of sprayer used during iodization per province

Province	Plastic, manual sprayer		Compressor- machine sprayer		Stainless steel, manual sprayer		Improvised*		Total+
	n	%	n	%	n	%	n	%	
Luzon	***35***	***77.8***	***5***	***11.1***	***3***	***6.7***	***2***	***4.4***	***45***
Ilocos Sur	1	25.0	3	75.0	0	0.0	0	0.0	4
Ilocos Norte	7	100.0	0	0.0	0	0.0	0	0.0	7
La Union	0	0.0	0	0.0	2	66.7	1	33.3	3
Pangasinan	22	100.0	0	0.0	0	0.0	0	0.0	22
Batangas	0	0.0	1	50.0	0	0.0	1	50.0	2
Occidental Mindoro	4	66.7	1	16.7	1	16.7	0	0.0	6
Manila	1	100.0	0	0.0	0	0.0	0	0.0	1
Visayas	***9***	***45.0***	***2***	***10.0***	***5***	***25.0***	***4***	***20.0***	***20***
Iloilo	2	50.0	0	0.0	2	50.0	0	0.0	4
Guimaras	5	83.3	0	0.0	1	16.7	0	0.0	6
Negros Occidental	1	20.0	1	20.0	2	40.0	1	20.0	5
Negros Oriental	1	33.3	0	0.0	0	0.0	2	66.7	3
Cebu	0	0.0	1	50.0	0	0.0	1	50.0	2
Mindanao	***1***	***16.7***	***4***	***66.7***	***1***	***16.7***	***0***	***0.0***	***6***
Misamis Oriental	0	0.0	1	100.0	0	0.0	0	0.0	1
Davao	0	0.0	1	100.0	0	0.0	0	0.0	1
General Santos City	0	0.0	1	50.0	1	50.0	0	0.0	2
Zamboanga	1	50.0	1	50.0	0	0.0	0	0.0	2
TOTAL	**45**	**63.4**	**11**	**15.5**	**9**	**12.7**	**6**	**8.5**	**71**

*Perforated plastic bottle, plastic bottle with perforated cap; water sprinkler; nozzle

+1 respondent purchased only iodized salt while another 2 respondents do not use any sprayer when iodizing salt

Table 8-8. Frequency and percent distribution of respondents by frequency of routine maintenance of iodine sprayer per province*

Province	Every use		Every 30 minutes		Everyday		Every week		Once a month		No maintenance		Total+
	n	%	n	%	n	%	n	%	n	%	n	%	
Luzon	***11***	***25.6***	***1***	***2.3***	***4***	***9.3***	***14***	***32.6***	***1***	***2.3***	***12***	***27.9***	***43***
Ilocos Sur	0	0.0	0	0.0	0	0.0	1	25.0	0	0.0	3	75.0	4
Ilocos Norte	1	14.3	0	0.0	1	14.3	3	42.9	0	0.0	2	28.6	7
La Union	0	0.0	0	0.0	0	0.0	1	33.3	0	0.0	2	66.7	3
Pangasinan	10	45.4	0	0.0	1	4.6	8	36.4	0	0.0	3	13.6	22
Batangas	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0	1
Occidental Mindoro	0	0.0	1	16.7	1	16.7	2	33.3	1	16.7	1	16.7	6
Manila	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	100.0	1
Visayas	***3***	***18.8***	***1***	***6.3***	***1***	***6.3***	***7***	***43.8***	***0***	***0.0***	***5***	***29.4***	***16***
Iloilo	2	50.0	0	0.0	0	0.0	1	25.0	0	0.0	1	25.0	4
Guimaras	0	0.0	0	0.0	0	0.0	3	50.0	0	0.0	3	50.0	6
Negros Occidental	0	0.0	0	0.0	1	20.0	3	60.0	0	0.0	0	0.0	4
Negros Oriental	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1
Cebu	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0	1
Mindanao	***1***	***20.0***	***0***	***0.0***	***2***	***40.0***	***1***	***20.0***	***1***	***20.0***	***0***	***0.0***	***5***
Misamis Oriental	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0	1
Davao	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0	1
General Santos City	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1
Zamboanga	0	0.0	0	0.0	1	50.0	0	0.0	1	50.0	0	0.0	2
TOTAL	**15**	**23.4**	**2**	**3.1**	**7**	**10.9**	**22**	**34.4**	**2**	**3.1**	**16**	**25.0**	**64**

*Limited to respondents using pressurized sprayer.
+1 respondents indicated no answer

Table 8-9. Frequency and percent distribution of respondents by availability/type of iodization machine per province

Province	Ribbon blender		Continuous-type blender		Cement mixer		Improvised inverted blender		No iodizing machine		Total*
	n	%	n	%	n	%	n	%	n	%	
Luzon	***4***	***8.5***	***3***	***6.4***	***0***	***0.0***	***0***	***0.0***	***41***	***85.4***	***48***
Ilocos Sur	0	0.0	0	0.0	0	0.0	0	0.0	6	100.0	6
Ilocos Norte	0	0.0	0	0.0	0	0.0	0	0.0	7	100.0	7
La Union	0	0.0	0	0.0	0	0.0	0	0.0	3	100.0	3
Pangasinan	0	0.0	0	0.0	0	0.0	0	0.0	22	100.0	22
Batangas	1	50.0	1	50.0	0	0.0	0	0.0	0	0.0	2
Occidental Mindoro	3	42.9	2	28.6	0	0.0	0	0.0	2	28.6	7
Metro Manila	0	0.0	0	0.0	0	0.0	0	0.0	1	100.0	1
Visayas	***1***	***5.3***	***2***	***10.5***	***2***	***10.5***	***0***	***0.0***	***14***	***73.7***	***19***
Iloilo	0	0.0	0	0.0	0	0.0	0	0.0	4	100.0	4
Guimaras	0	0.0	0	0.0	0	0.0	0	0.0	6	100.0	6
Negros Occidental	0	0.0	1	20.0	2	40.0	0	0.0	2	40.0	5
Negros Oriental	1	33.3	0	0.0	0	0.0	0	0.0	2	66.7	3
Cebu	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0	1
Mindanao	***1***	***16.7***	***4***	***66.7***	***0***	***0.0***	***1***	***16.7***	***0***	***0.0***	***6***
Misamis Oriental	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0	1
Davao	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0	1
General Santos City	1	50.0	1	50.0	0	0.0	0	0.0	0	0.0	2
Zamboanga	0	0.0	1	50.0	0	0.0	1	50.0	0	0.0	2
TOTAL	**6**	**8.2**	**9**	**12.3**	**2**	**2.7**	**1**	**1.4**	**55**	**75.3**	**73**

*1 respondent claimed to have a machine but do not know the type.

Table 8-10. Frequency and percent distribution of respondents by frequency of routine maintenance of iodization machine per province

Province	Every use		Everyday		Every week		Every month		Total*
	n	%	n	%	n	%	n	%	
Luzon	***1***	***20.0***	***2***	***40.0***	***1***	***20.0***	***1***	***20.0***	***5***
Ilocos Sur	0	0.0	0	0.0	0	0.0	0	0.0	0
Ilocos Norte	0	0.0	0	0.0	0	0.0	0	0.0	0
La Union	0	0.0	0	0.0	0	0.0	0	0.0	0
Pangasinan	0	0.0	0	0.0	0	0.0	0	0.0	0
Batangas	0	0.0	0	0.0	1	100.0	0	0.0	1
Occidental Mindoro	1	25.0	2	50.0	0	0.0	1	25.0	4
Visayas	***3***	***60.0***	***2***	***40.0***	***0***	***0.0***	***0***	***0.0***	***5***
Iloilo	0	0.0	0	0.0	0	0.0	0	0.0	0
Guimaras	0	0.0	0	0.0	0	0.0	0	0.0	0
Negros Occidental	0	0.0	2	100.0	0	0.0	0	0.0	2
Negros Oriental	1	100.0	0	0.0	0	0.0	0	0.0	1
Cebu	2	100.0	0	0.0	0	0.0	0	0.0	2
Mindanao	***0***	***0.0***	***2***	***40.0***	***2***	***40.0***	***1***	***20.0***	***5***
Misamis Oriental	0	0.0	0	0.0	1	100.0	0	0.0	1
Davao	0	0.0	0	0.0	1	100.0	0	0.0	1
General Santos City	0	0.0	1	100.0	0	0.0	0	0.0	1
Zamboanga	0	0.0	1	50.0	0	0.0	1	50.0	2
TOTAL	**4**	**26.7**	**6**	**40.0**	**3**	**20.0**	**2**	**13.3**	**15**

*3 respondents indicated no answer

Table 8-11. Frequency and percent distribution of respondents by minimum target of iodization level (20 ppm) per province

Province	Within recommended		Below recommended*		Above recommended		Total+
	n	%	n	%	n	%	
Luzon	***5***	***22.7***	***1***	***4.6***	***16***	***72.7***	***22***
Ilocos Sur	0	0.0	0	0.0	1	100.0	1
Ilocos Norte	1	25.0	0	0.0	3	75.0	4
La Union	0	0.0	0	0.0	2	100.0	2
Pangasinan	2	15.4	1	7.7	10	76.9	13
Batangas	1	100.0	0	0.0	0	0.0	1
Occidental Mindoro	1	100.0	0	0.0	0	0.0	1
Visayas	***2***	***28.6***	***1***	***14.3***	***4***	***57.1***	***7***
Iloilo	0	0.0	1	50.0	1	50.0	2
Guimaras	1	100.0	0	0.0	0	0.0	1
Negros Occidental	1	33.3	0	0.0	2	66.7	3
Negros Oriental	0	0.0	0	0.0	1	50.0	1
Cebu	0	0.0	0	0.0	0	0.0	0
Mindanao	***1***	***50.0***	***0***	***0.0***	***1***	***50.0***	***2***
Misamis Oriental	0	0.0	0	0.0	0	0.0	0
Davao	0	0.0	0	0.0	1	100.0	1
General Santos City	0	0.0	0	0.0	0	0.0	0
Zamboanga	1	100.0	0	0.0	0	0.0	1
TOTAL	**8**	**25.8**	**2**	**6.5**	**21**	**67.7**	**31**

*The recommended iodine level is 20 to 70 ppm
+43 respondents indicated unknown

Table 8-12. Frequency and percent distribution of respondents by maximum target of iodization level (70 ppm) per province

Province	Within recommended		Below recommended*		Above recommended		Total+
	n	%	n	%	n	%	
Luzon	***3***	***13.6***	***1***	***4.6***	***18***	***81.8***	***22***
Ilocos Sur	0	0.0	0	0.0	1	100.0	1
Ilocos Norte	0	0.0	0	0.0	4	100.0	4
La Union	0	0.0	0	0.0	2	100.0	2
Pangasinan	1	7.7	1	7.7	11	84.6	13
Batangas	1	100.0	0	0.0	0	0.0	1
Occidental Mindoro	1	100.0	0	0.0	0	0.0	1
Visayas	***1***	***14.3***	***1***	***14.3***	***5***	***71.4***	***7***
Iloilo	0	0.0	1	50.0	1	50.0	2
Guimaras	0	0.0	0	0.0	1	100.0	1
Negros Occidental	1	33.3	0	0.0	2	66.7	3
Negros Oriental	0	0.0	0	0.0	1	100.0	1
Cebu	0	0.0	0	0.0	0	0.0	0
Mindanao	***0***	***0.0***	***0***	***0.0***	***2***	***100.0***	***2***
Misamis Oriental	0	0.0	0	0.0	0	0.0	0
Davao	0	0.0	0	0.0	1	100.0	1
General Santos City	0	0.0	0	0.0	0	0.0	0
Zamboanga	0	0.0	0	0.0	1	100.0	1
TOTAL	**4**	**12.1**	**2**	**6.1**	**27**	**81.8**	**33**

*The recommended iodine level is 20 to 70 ppm
+41 respondents indicated unknown

Table 8-13. Frequency and percent distribution of respondents by computed* iodine content (ppm) of iodized salt per province

Province	Within recommended		Below recommended		Above recommended+		Total•
	n	%	n	%	n	%	
Luzon	***18***	***47.4***	***14***	***36.8***	***6***	***15.8***	***38***
Ilocos Sur	2	40.00	3	60.0	0	0.0	5
Ilocos Norte	2	50.0	1	25.0	1	25.0	4
La Union	2	66.7	1	33.3	0	33.3	3
Pangasinan	8	44.4	7	38.9	3	16.7	18
Batangas	1	100.0	0	0.0	0	0.0	1
Occidental Mindoro	3	42.9	2	28.6	2	28.6	7
Visayas	***11***	***61.1***	***5***	***27.8***	***2***	***11.1***	***18***
Iloilo	1	25.0	3	75.0	0	0.0	4
Guimaras	4	80.0	0	0.0	1	20.0	5
Negros Occidental	4	80.0	1	20.0	0	0.0	5
Negros Oriental	1	33.3	1	33.3	1	33.3	3
Cebu	1	100.0	0	0.0	0	0.0	1
Mindanao	***2***	***33.3***	***4***	***66.7***	***0***	***0.0***	***6***
Misamis Oriental	1	100.0	0	0.0	0	0.0	1
Davao	0	0.0	1	100.0	0	0.0	1
General Santos City	0	0.0	2	100.0	0	0.0	2
Zamboanga	1	50.0	1	50.0	0	0.0	2
TOTAL	**31**	**50.0**	**23**	**37.1**	**8**	**12.9**	**62**

*The iodine level was computed based on the answer to the following: amount of fortificant used per solution and amount of non-iodized salt per batch of iodization

+ The recommended iodine level is 20 to 70 ppm

•11 respondents indicated either unknown details or incomplete details; 1 respondent purchased only iodized salt

Table 8-14. Frequency and percent distribution of respondents by method of salt iodization used per province

Province	Machine		Manual		Total
	n	%	n	%	
Luzon	***8***	***17.0***	***39***	***83.0***	***47***
Ilocos Sur	0	0.0	6	100.0	6
Ilocos Norte	0	0.0	7	100.0	7
La Union	0	0.0	3	100.0	3
Pangasinan	1	4.6	21	95.4	22
Batangas	2	100.0	0	0.0	2
Occidental Mindoro	5	71.4	2	28.6	7
Visayas	***7***	***35.0***	***13***	***65.0***	***20***
Iloilo	1	25.0	3	75.0	4
Guimaras	0	0.0	6	100.0	6
Negros Occidental	3	60.0	2	40.0	5
Negros Oriental	1	33.3	2	66.7	3
Cebu	2	100.0	0	0.0	2
Mindanao	***5***	***83.3***	***1***	***16.7***	***6***
Misamis Oriental	1	100.0	0	0.0	1
Davao	1	100.0	0	0.0	1
General Santos City	1	50.0	1	50.0	2
Zamboanga	2	100.0	0	0.0	2
TOTAL	**20**	**27.4**	**53**	**72.6**	**73**

*1 respondent purchased only iodized salt

Table 8-15. Frequency and percent distribution of respondents by known use of iodized salt* being produced per province

Province	Human consumption		Food processing		Animal consumption		Total[+]
	n	%	n	%	n	%	
Luzon	***43***	***97.7***	***6***	***13.6***	***0***	***0.0***	***44***
Ilocos Sur	5	100.0	0	0.0	0	0.0	5
Ilocos Norte	6	100.0	0	0.0	0	0.0	6
La Union	3	100.0	0	0.0	0	0.0	3
Pangasinan	22	100.0	3	13.0	0	0.0	22
Batangas	1	50.0	2	100.0	0	0.0	2
Occidental Mindoro	6	100.0	1	16.7	0	0.0	6
Visayas	***19***	***95.0***	***2***	***10.0***	***1***	***5.0***	***20***
Iloilo	4	100.0	0	0.0	0	0.0	4
Guimaras	6	100.0	0	0.0	0	0.0	6
Negros Occidental	5	100.0	0	0.0	0	0.0	5
Negros Oriental	3	100.0	1	33.3	1	33.3	3
Cebu	1	50.0	1	50.0	0	0.0	2
Mindanao	***5***	***83.3***	***1***	***16.7***	***2***	***33.3***	***6***
Misamis Oriental	1	100.0	1	100.0	1	100.0	1
Davao	1	100.0	0	0.0	0	0.0	1
General Santos City	1	100.0	0	0.0	1	50.0	2
Zamboanga	2	100.0	0	0.0	0	0.0	2
TOTAL	**67**	**95.7**	**9**	**12.9**	**3**	**4.3**	**70**

*Multiple responses

[+]4 respondents indicated no answer

Table 8-16. Frequency and percent distribution of respondents by method used to check level of iodine in iodized salt per province

Province	RTK		None		Titration & RTK		Total*
	n	%	n	%	n	%	
Luzon	***29***	***36.2***	***17***	***36.2***	***1***	***2.1***	***47***
Ilocos Sur	5	83.3	1	16.7	0	0.0	6
Ilocos Norte	7	100.0	0	0.0	0	0.0	7
La Union	1	33.3	2	66.7	0	0.0	3
Pangasinan	12	54.6	10	45.4	0	0.0	22
Batangas	0	0.0	0	0.0	1	100.0	1
Occidental Mindoro	6	85.7	1	14.3	0	0.0	7
Manila	0	0.0	1	100.0	0	0.0	1
Visayas	***16***	***84.2***	***3***	***15.8***	***0***	***0.0***	***19***
Iloilo	3	75.0	1	25.0	0	0.0	4
Guimaras	5	83.3	1	16.7	0	0.0	6
Negros Occidental	5	100.0	0	0.0	0	0.0	5
Negros Oriental	3	100.0	0	0.0	0	0.0	3
Cebu	0	0.0	1	100.0	0	0.0	1
Mindanao	***6***	***100.0***	***0***	***0.0***	***0***	***0.0***	***6***
Misamis Oriental	1	100.0	0	0.0	0	0.0	1
Davao	1	100.0	0	0.0	0	0.0	1
General Santos City	2	100.0	0	0.0	0	0.0	2
Zamboanga	2	100.0	0	0.0	0	0.0	2
TOTAL	**51**	**70.8**	**20**	**27.8**	**1**	**1.4**	**72**

*2 respondents indicated no answer

Table 8-17. Frequency and percent distribution of respondents by method used to check level of iodine in iodized salt per province

Province	RTK		None		Titration & RTK		Total*
	n	%	n	%	n	%	
Luzon	***29***	***36.2***	***17***	***36.2***	***1***	***2.1***	***47***
Ilocos Sur	5	83.3	1	16.7	0	0.0	6
Ilocos Norte	7	100.0	0	0.0	0	0.0	7
La Union	1	33.3	2	66.7	0	0.0	3
Pangasinan	12	54.6	10	45.4	0	0.0	22
Batangas	0	0.0	0	0.0	1	100.0	1
Occidental Mindoro	6	85.7	1	14.3	0	0.0	7
Manila	0	0.0	1	100.0	0	0.0	1
Visayas	***16***	***84.2***	***3***	***15.8***	***0***	***0.0***	***19***
Iloilo	3	75.0	1	25.0	0	0.0	4
Guimaras	5	83.3	1	16.7	0	0.0	6
Negros Occidental	5	100.0	0	0.0	0	0.0	5
Negros Oriental	3	100.0	0	0.0	0	0.0	3
Cebu	0	0.0	1	100.0	0	0.0	1
Mindanao	***6***	***100.0***	***0***	***0.0***	***0***	***0.0***	***6***
Misamis Oriental	1	100.0	0	0.0	0	0.0	1
Davao	1	100.0	0	0.0	0	0.0	1
General Santos City	2	100.0	0	0.0	0	0.0	2
Zamboanga	2	100.0	0	0.0	0	0.0	2
TOTAL	**51**	**70.8**	**20**	**27.8**	**1**	**1.4**	**72**

*2 respondents indicated no answer

Table 8-18. Frequency and percent distribution of respondents by packaging material used when re/packing* iodized salt per province

Province	Sack		Plastic bag		Total
	n	%	n	%	
Luzon	***40***	***83.3***	***10***	***20.8***	***48***
Ilocos Sur	4	66.7	3	50.0	6
Ilocos Norte	6	85.7	1	16.7	7
La Union	3	100.0	0	0.0	3
Pangasinan	21	95.4	1	4.6	22
Batangas	2	50.0	1	50.0	2
Occidental Mindoro	3	42.9	4	57.1	7
Manila	1	100.0	0	0.0	1
Visayas	***17***	***85.0***	***3***	***15.0***	***20***
Iloilo	4	100.0	0	0.0	4
Guimaras	4	66.7	2	33.3	6
Negros Occidental	5	100.0	0	0.0	5
Negros Oriental	3	100.0	0	0.0	3
Cebu	1	50.0	1	50.0	2
Mindanao	***6***	***100,0***	***1***	***16.7***	***6***
Misamis Oriental	1	100.0	0	0.0	1
Davao	1	100.0	0	0.0	1
General Santos City	2	100.0	0	0.0	2
Zamboanga	2	100.0	1	50.0	3
TOTAL	**63**	**85.1**	**14**	**18.9**	**74**

*Multiple responses

Table 8-19. Frequency and percent distribution of respondents by system of storage and retrieval of iodized salt that is being practiced per province

Province	First in, First out		Top/Front Salt First		No system of storage/retrieval		Not applicable*		Total
	n	%	n	%	n	%	n	%	
Luzon	***10***	***20.8***	***6***	***12.5***	***9***	***18.8***	***23***	***47.9***	***48***
Ilocos Sur	0	0.0	0	0.0	2	33.3	4	66.7	6
Ilocos Norte	2	28.6	0	0.0	2	28.6	3	42.9	7
La Union	1	33.3	0	0.0	1	33.3	1	33.3	3
Pangasinan	4	18.2	0	0.0	4	18.2	14	63.6	22
Batangas	1	50.0	1	50.0	0	0.0	0	0.0	2
Occidental Mindoro	1	14.3	5	71.4	0	0.0	1	14.3	7
Manila	1	100.0	0	0.0	0	0.0	0	0.0	1
Visayas	***3***	***15.0***	***10***	***50.0***	***1***	***5.0***	***6***	***30.0***	***20***
Iloilo	0	0.0	2	50.0	0	0.0	2	50.0	4
Guimaras	0	0.0	2	33.3	1	16.7	3	50.0	6
Negros Occidental	1	20.0	4	80.0	0	0.0	0	0.0	5
Negros Oriental	0	0.0	2	66.7	1	33.3	0	0.0	3
Cebu	2	100.0	0	0.0	0	0.0	0	0.0	2
Mindanao	***5***	***83.3***	***0***	***0.0***	***0***	***0.0***	***1***	***16.7***	***6***
Misamis Oriental	1	100.0	0	0.0	0	0.0	0	0.0	1
Davao	1	100.0	0	0.0	0	0.0	0	0.0	1
General Santos City	1	50.0	0	0.0	0	0.0	1	50.0	2
Zamboanga	2	100.0	0	0.0	0	0.0	0	0.0	2
TOTAL	**18**	**24.3**	**16**	**21.6**	**10**	**13.5**	**30**	**40.5**	**74**

*Not following any storage and retrieval system because iodized salt is not stored since iodization is done only upon purchase of buyer

Table 8-20. Frequency and percent distribution of respondents by availability of a system for product recall per province

Province	Yes		None		Total*
	n	%	n	%	
Luzon	***5***	***11.9***	***37***	***88.1***	***42***
Ilocos Sur	0	0.0	6	100.0	6
Ilocos Norte	0	0.0	6	100.0	6
La Union	0	0.0	2	100.0	2
Pangasinan	0	0.0	18	100.0	18
Batangas	1	50.0	1	50.0	2
Occidental Mindoro	4	57.1	3	42.9	7
Manila	0	0.0	1	100.0	1
Visayas	***2***	***12.5***	***14***	***87.5***	***16***
Iloilo	0	0.0	3	100.0	3
Guimaras	1	25.0	3	75.0	4
Negros Occidental	1	20.0	4	80.0	5
Negros Oriental	0	0.0	2	66.7	3
Cebu	0	0.0	2	100.0	2
Mindanao	***1***	***20.0***	***4***	***80.0***	***5***
Misamis Oriental	1	100.0	0	0.00	1
Davao	0	0.0	1	100.0	1
General Santos City	0	0.0	2	100.0	2
Zamboanga	0	0.0	1	100.0	1
TOTAL	**8**	**12.7**	**55**	**87.3**	**63**

*11 respondent indicated no answer

Table 8-21. Frequency and percent distribution of respondents by availability of forms for recordkeeping per province

Province	Yes		No		Total*
	n	%	n	%	
Luzon	***15***	***33.3***	***30***	***66.7***	***45***
Ilocos Sur	0	0.0	6	100.0	6
Ilocos Norte	1	16.7	5	83.3	6
La Union	0	0.0	3	100.0	3
Pangasinan	7	35.0	13	65.0	20
Batangas	2	100.0	0	0.0	2
Occidental Mindoro	4	57.1	3	42.9	7
Manila	1	100.0	0	0.0	1
Visayas	***6***	***31.6***	***13***	***63.2***	***19***
Iloilo	1	25.0	3	75.0	4
Guimaras	0	0.00	6	100.0	6
Negros Occidental	2	50.0	2	50.0	4
Negros Oriental	1	33.3	2	66.7	3
Cebu	2	100.0	0	0.0	2
Mindanao	***6***	***100.00***	***0***	***0.0***	***6***
Misamis Oriental	1	100.0	0	0.0	1
Davao	1	100.0	0	0.0	1
General Santos City	2	100.0	0	0.0	2
Zamboanga	2	100.0	0	0.0	2
TOTAL	**27**	**38.6**	**43**	**61.4**	**70**

*4 respondents indicated no answer.