



Final Report

Survey of Food Processors Utilizing Iodized Salt

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Taguig City, Philippines

June 2015



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Acronyms and Abbreviations

AP As Purchased

ASIN Law An Act Promoting Salt Iodization Nationwide and for other purposes

BFAD Bureau of Food and Drugs

CV coefficient of variation

CoA Certificate of Analysis

DILG Department of the Interior and Local Government

DOH Department of Health

DTI Department of Trade and Industry

EP Edible Portion

FDA Food and Drug Authority

FNRI Food and Nutrition Research Institute

IDD Iodine Deficiency Disorder

IQ Intelligence quotient

LGUs Local Government Units

LTO License to Operate

MT metric ton

NCP Nutrition Center of the Philippines

NCR National Capital Region



NMIS National Meat Inspection Service

NNS National Nutrition Survey

NSIP National Salt Iodization Program

PhP Philippine Peso

PPM parts per million

QA Quality Assurance

RA Republic Act

RENI Recommended Energy and Nutrient Intake

RTK Rapid Test Kit

USI Universal Salt Iodization

UTI Urinary tract infection



Glossary

Artisanal bread – bread produced artisanally. Bread baked in small batches rather than on a vast assembly line as done with industrially-/ mass-produced bread. Such products are sold unbranded, fresh and usually from the site of production.

Bagoong alamang – or shrimp paste, is a condiment made from fermented shrimp fry or krill. Shrimp fry is cleaned thoroughly and washed in weak brine solution (10%). The shrimp fry are then mixed with salt in a 25% salt to 75% shrimp ratio by weight. Bagoong paste varies in appearance, flavor, and spiciness depending on the type. The paste is customarily sauteed with various condiments, and its flavour can range from salty to spicy-sweet. In other parts of Southeast Asia and in Western Visayas where it is also known as *ginamos*, shrimp is fermented beyond recognition or ground to a smooth consistency. However, in many parts of the Philippines, the shrimp in bagoong alamang is readily identifiable, and the sauce itself has a chunky consistency.

Bagoong isda – or *ginamos*, as it is known in some parts of the Philippines, is a condiment made of partially or completely fermented fish. It is prepared by mixing uniformly salt and fish usually by volume. The mixture is covered and left to ferment for 30-90 days with occasional stirring to make sure the salt is spread evenly.

Canned corned beef – salt-cured beef sold in cans.

Canned fish – processed fish sold in cans usually preserved in oil, brine, salt water or with a sauce (e.g. sardines in tomato sauce).

Cooked salt – salt produced through cooking of salt brine until water evaporates and salt crystals of fine form are formed. Salt producers in Northern Luzon usually produce this type of salt.

Crackers - a thin, usually square-shaped baked good made from white flour, shortening, yeast, and baking soda, with most varieties lightly sprinkled with coarse salt. It has perforations throughout its surface, to allow steam to escape for uniform rising, and along the edges, as individual crackers are broken from larger sheets during manufacturing.

Hotdog – also known as frankfurter or sausage. It is made from a mixture of meat trimmings (i.e. pork, beef or chicken) and fat, added with flavorings and preservatives. The mixture is stuffed in casing, smoked and cooked for approximately 1 hour.

Imported solar salt – solar salt imported from other salt producing countries such as India, China and Australia.



Instant noodles - Dehydrated noodles that come in a cup or bowl or pouch, often accompanied by sachets of dehydrated seasoning or condiments, which are ready to eat after the addition of boiling water.

Local solar salt – salt produced in the Philippines through solar drying. Seawater is pumped through a series of concentration ponds in which the seawater gradually evaporates and some impurities are deposited. The saturated brine is solar dried on salt beds. Coarse salt crystals are harvested once the remaining brine has evaporated.

Pandesal – a popular bread roll made of flour, eggs, yeast, sugar and salt in the Philippines.

Patis – or fish sauce, is a condiment that is derived from fish that have been allowed to ferment. It is the clear yellowish liquid that floats above the fermented mixture. It is drained, pasteurized, and bottled separately, while the residue is turned into *bagoong*. It is often added during the cooking process or used in mixed form as a dipping condiment.

Pure vacuum dried salt – salt that is produced through vacuum process. The salt is dissolved in pure water and treated to remove impurities, after which the water is evaporated off by passing the solution through chambers at progressively lower pressures. This forms a super-saturated solution from which salt precipitates, forming a slurry that is dried by centrifuging and fluid bed drying.

Pork longganisa – also known as pork sausage, is fresh or preserved pork meat, chopped or comminuted fine, to which salt and spices has been added. It may contain sugar, seasoning, saltpeter (potassium or sodium nitrate). It is usually stuffed into casings and may undergo smoking, curing fermentation and heating. Pork longganisa in the Philippines varies with each region. Among others, Lucban is known for its garlic-laden longganisa while Cebu longganisa, which Cebuanos call chorizo, is known for its sweet taste.

Soy sauce – or soya sauce, is a condiment made from fermented soybeans with *Aspergillus sojae* molds, salt and water. It is basically salty and blackish in color.

Tamban tuyoy – It is sardine fish, solar-dried in its original form, which has not been cut and eviscerated, and with scales intact.



Executive Summary

Background

Republic Act 8172 or “An Act Promoting Salt Iodization Nationwide and for other purposes” requires that all food processors use iodized salt in food processing unless the use of iodized salt has an adverse effect on their product. The 2008 National Nutrition Survey reports that at least five food products consumed by the highest percentage of households were processed food. These were bread (including pandesal), soy sauce, instant noodles, crackers, and canned sardines. Further, there was an observed increasing trend in the sales of packaged food (i.e. dried processed food, canned/preserved food, dairy, bakery, frozen processed food, noodles) in the country in the last 6 years. However, the amount of iodized salt and the subsequent potential amount of iodine (if adequately iodized salt is used) reaching consumers through consumption of these foods are not known. Since there are approximately 12,000 registered food processors in the country, the food processors survey was limited to the top consumed processed food products reported in the 2008 National Nutrition Survey (bread, soy sauce, fish sauce, crackers, instant noodles, canned fish or sardines, hotdog, canned corned beef, tamban tuyo, bagoong isda, pork longganisa and bagoong alamang) that are thought to be consumed in amounts that would contribute significantly to total salt intake across different demographic groups

Objectives

1. Identify the food processors covering at least 50% of the brand share of the following food products: instant noodles, bread (including pandesal), canned corned beef, crackers, fish sauce, soy sauce, canned fish /sardine, hotdog, pork longganisa, tamban tuyo, bagoong alamang, and bagoong isda.
2. Estimate the total amount of salt used to process the identified target foods by the food processors identified in objective 1.
3. Verify with the food processors the consumption of salt per type of food. Inquire if there are other food products that they manufacture that use significant amount of salt.
4. Estimate per capita consumption, population reach (total and estimates by region where possible) and frequency of consumption of each food category.
5. Determine how these food processors check the level of iodine in the iodize salt they procure (certificate of analysis, use of test kits, titration, etc.).



6. Where possible, determine what % of salt used in the target food products are iodized (and if possible) what % is adequately iodized – according to Certificate of Analysis/internal checks if available.
7. Determine the factors that contribute to the use of iodized/non-iodized salt in the food products.
8. Determine the knowledge of the key personnel (deciding on the use or non-use of iodized salt) about iodine, iodized salt, the salt iodization program, ASIN Law and the standards for iodization.
9. Determine if the food processors, when using iodized salt, indicate in their labels the use of iodized salt (and/or Sangkap Pinoy Seal for iodine).
10. Come-up with recommendations to increase the use of iodized salt in processed foods and for monitoring this.

Methods

Food processors targeted for this survey were divided into three groups: major, minor and no data. Food processors of brands of bread, crackers, instant noodles, fish sauce, soy sauce, canned fish / sardines, hotdog and canned corned beef identified in the Euromonitor International market research database that comprised at least 50% of the total market share of the food product were classified as food processors with major market share. Food processors whose brands were not identified in the Euromonitor database but were presumably classified under “others” were classified as food processors with minor market share. Food processors of tamban tuyo, bagoong alamang, bagoong isda and pork longganisa were classified as food processors with no market share data. At least 122 respondents were targeted for each of these four food products. Artisanal bakery was included in this group because artisanal bread had 50.7% market share of total bread sold in the domestic market. However, because of refusals, nomadic or traveling food processors and seasonal production required sample size of 122 was not met for bagoong isda and tamban tuyo. Collected salt samples were analyzed for iodine concentration using iCheck IODINE (BioAnalyt GmbH, Germany).

Summary of Results

The major findings of the survey were as follows:

1. A total of 578 food processors agreed to be surveyed. Of these interviewed food processors, 11 food processors produced food brands with major market share, 39 produced food brands with minor market share while 528 produced food products with no market share data.
2. There were surveyed food processors of food products that do not have Business Registration (major: 27.3%; minor: 15.4%) and / or License to Operate (major: 18.2%; minor: 38.5%). Majority of food processors of tamban tuyo, bagoong isda, bagoong alamang, pork longganisa and artisanal breads were unregistered and unlicensed.
3. Almost all (99%) respondents were aware of iodized salt. However, almost half of the respondents did not know the benefits to the population of using iodized salt, did not answer, or



thought there were no beneficial effects. Further, only three reported the correct standard iodine concentration of 30 to 70 ppm in iodized salt.

4. Majority (72.7%) of food processors of food brands with major market share were aware of the NSIP while all were aware of ASIN Law. However, 53.8% of food processors of food brands with minor market share while almost all food processors of tamban tuyo, pork longganisa, and bagoong were not aware of both NSIP and ASIN Law.
5. There were food processors (14.3%) who viewed ASIN Law as unfavorable to the food processing industry. Reasons cited were perceived Incompatibility of iodized salt in manufacturing their food product (specifically for bagoong and tamban tuyo food processors), higher price compared with non-iodized salt and lack of study on the effect of using iodized salt on food products.
6. Strict implementation of ASIN law, promotion of iodized salt use and exclusion of processed foods from the mandatory use of iodized salt were cited as suggested improvements in the ASIN Law. These were also cited as the needed support of the food processors so that they can follow ASIN Law.
7. Food processors of food brands with major and minor market share recommended strict monitoring of salt suppliers, rapid test kits (RTKs) being available at the iodized salt producers/suppliers, disallowing selling of rock salt and lowering prices of iodized salt to ensure the quality of iodized salt.
8. Product information was provided for 13 food brands from the 11 food processors with major market share. No data from brands of crackers and canned corned beef with major market share were available due to refusals of food processors producing these products. Information on 79 food brands with minor market share was provided by 39 food processors and on 576 food brands from 528 food processors considered as having no substantial market share data.
9. Almost all food brands with major market share were distributed nationwide. Brands with minor market share were either distributed nationwide or in Luzon area only. Food products with no market share data were usually distributed in areas near their production site.
10. The brand of canned corned beef with major market share targets only consumer classes A, B and C. The other brands of bread, canned fish, fish sauce, instant noodles and soy sauce with major market shares mostly target consumer classes B and C. The brand of canned corned beef with minor market share targets all consumer classes. Most artisanal bread, pork longganisa, bagoong and tamban tuyo targets consumer classes C, D and E while shrimp paste target consumer classes B, C and D.
11. Food processors reported that they use both iodized and non-iodized salt. Food brands with major market share usually used imported solar salt, brands with minor market share used vacuum dried salt and food products with no market share data use local solar salt.
12. Food processors of food brands with major and minor market shares reported that 85% of salt used as ingredient was iodized. Food processors of bagoong alamang, bagoong isda and tamban tuyo mainly used non-iodized salt.
13. Arvin International was the common supplier of salt of food processors of food brands with major and minor market share. Food processors of food products with no market share data commonly source salt from local public markets, groceries or suppliers.
14. Ten of the 12 food brands with major market share that reported using iodized salt cited referring to the Certificate of Analysis provided by their salt supplier to check the iodine concentration of



the salt supplied to them. Only half (51%) of the food brands with minor market share also used Certificate of Analysis of their salt supplier.

15. Iodized salt was used mainly because it was required by law or recommended by authority. The higher price of iodized salt compared with non-iodized salt is a hindering factor for its wider use. The perceived adverse effect of iodized salt in the final product prevents its use among bagoong alamang and tamban tuyo food processors.
16. All food brands with major market share declared the use of iodized salt in their ingredients list on the package label. Food products with no market share data more often do not pack their products individually thus had no labeling information available.
17. About 45% of salt sampled from food processors who reported using only iodized salt had iodine concentrations below <30 ppm. Three of these came from food processors of major brands of food products. Further, there were a few salt samples from non-iodized salt users that were determined to have iodine concentrations between 30 – 70 ppm.
18. Using the available daily per capita consumption data and results of iCheck IODINE analysis on the collected salt samples from the food processors, at least 43% of the required daily iodine intake for adult can be met if seven of the 12 food products surveyed were consumed daily.

Recommendations to increase the use of adequately iodized salt in processed foods

1. Create and maintain database of all food processors, regardless of registration status and operational size. The following information should be included in the database: complete company name, owner, contact person, contact details, produced food products and volume of production. This database should be controlled by a specific agency to streamline data entries, editing and requests. The database can be used to conduct monitoring (i.e. utilization of iodized salt) of all food processors regardless of business registration status.
2. Continue educating the food processors on how to identify whether salt is iodized or not, that refined salt does not always equate to iodized salt and that not all rock or coarse salt is non-iodized. It was observed that there were significant numbers of food processors that still identify iodized salt through grain size: the perception is that refined salt is iodized while rock or coarse salt is non-iodized.
3. Conduct information dissemination among food processors on the results of national studies on the fact that there is no effect on product quality from using iodized salt in food processing (processed fish and seafood, processed meat). It is also an opportunity to train food processors on usage, i.e. measurement of refined salt when substituting for coarse salt. The contrasting experience of food processors using iodized salt against those who are not using iodized salt during food processing might have been brought about by the lack of information on how to properly use refined salt when substituting for coarse salt. This lack of knowledge on proper usage might have contributed to wrongly attributing adverse organoleptic changes in their product to iodized salt, since iodized salt is identified as refined salt only. Also, mitigation strategy should include advocating among food processors that they demand adequately iodized salt from salt suppliers.
4. Revitalization of monitoring programs such as the Bantay Asin Task Force and Patak sa Asin. The FDA, being the lead agency in-charge of food safety and quality monitoring should strictly and regularly conduct monitoring of the quality of salt both at the food processors and producers/suppliers. The lack of quality control method to check the iodine content of the salt used in food processing is contributory to the use of non-iodized or inadequately iodized salt among food processors. Quality control is not the responsibility of the food processors alone and



they should be able to request and rely on Certificate of Analysis to assess iodine content when ordering directly from an iodized salt producer. It should be viewed as an obligation of salt suppliers to meet the requirements of their customers. Respondents constantly mentioned the need for strict implementation of the law and continuous monitoring among salt producers and suppliers. The Bantay Asin Task Forces at the regional level can take the lead in conducting advocacy on salt iodization in the region and form a mechanism to assist the FDA in monitoring program implementation and addressing implementation problems and issues.



Introduction

Background

Iodine deficiency disorders (IDD) are the leading cause of preventable mental retardation and impaired psychomotor function in young children. Universal salt iodization (USI) is widely recognized as the most cost-effective strategy to prevent and control this deficiency. In the Philippines, the National Salt Iodization Program was launched in 1994. Its components include production (including technology transfer and quality assurance), marketing and distribution, promotion and advocacy and management and coordination. This program was supported by the enactment of the Republic Act 8172 (RA 8172) or “An Act Promoting Salt Iodization Nationwide and for Other Purposes” in 1995 [1].

The law requires that all food-grade salt for human and animal consumption be iodized following the standards set by the then Bureau of Food and Drugs (BFAD) [1]. Further, it is stated in the Revised Implementing Rules and Regulations that “all food processors and producers shall utilize iodized salt in their products except when the use of iodized salt will have an adverse effect on a specified product. All food processors shall also include a label on the use of iodized salt in their food products” [2].

Iodine intake comes from the following sources: 1) natural food and water sources; 2) processed foods produced using iodized salt; 3) iodized salt added in food preparation or to prepared food in the households; and 4) supplements. Among Filipinos, supplements are an unlikely source as these are not widely consumed. The National Nutrition Surveys (NNS) have shown a steady increase in the awareness and claimed users of iodized salt in the household from 1998 to 2008 [3]. In the 2008 NNS, quantitative testing of household salt for iodine content using the WYD Iodine checker machine showed that only 19.5% of households were using salt with an iodine concentration of 20 ppm and over. The 2008 NNS reports that at least 5 of the top 30 food items most commonly consumed by the households include processed food products that utilized salt as an ingredient during processing. These five processed food products found to be consumed by the highest percentage of households were bread (including pandesal), soy sauce, instant noodles, crackers, and canned sardines [3].



Further, there was an observed increasing trend in the sales of packaged food (i.e. dried processed food, canned/preserved food, dairy, bakery, frozen processed food, noodles) in the country in the last 6 years [4]. This increasing trend might be a representation of the changing food purchasing practice and food consumption of the population. There are approximately 12,000 food processors registered in the country [5] a probable reflection of the dominance of this industry in the consuming market.

The amount of iodized salt utilized by the local food processing industry and subsequently the amount of iodine reaching local consumers through this channel is unknown. The utilization of salt for exported food products and the need for exemption (use of non-iodized salt) for certain countries is not documented. The Food and Drug Administration (FDA, formerly BFAD) has issued standards on use of iodized salt in food products [6-7]. Salt repackers, defined as one who packs iodized salt from bulk packaging to retail packaging for further distribution, or one who buys and repacks using its own label [1], must also be registered with the FDA. Since the law requires that iodized salt be used in food manufacturing [1], and all repackaged salt for human consumption should be iodized, it would be expected that all FDA licensed food processors use iodized salt in their products and that salt repackers market only iodized salt. However, there is no document stating that proof of iodized salt usage is a licensing requirement of food processors. On the other hand, FDA issued guidelines that required all establishments engaged in salt manufacture, importation, wholesale, repacking, and distribution shall secure a License to Operate from the FDA, which shall be issued only to establishments that have demonstrated capacity to produce, supply and ensure iodized salt [8].

The Nutrition Center of the Philippines (NCP) proposed to conduct two independent surveys among food processors and salt repackers. In compliance with the Terms of Reference of the client, the food processors survey was limited to food processors producing the top consumed processed food products that are thought to contribute significantly to salt intake due to their widespread consumption as reported in the 2008 NNS [3]. The survey among the food processors determined the nature and extent of utilization of salt (iodized and not iodized) in their food products. The food processors' procedures in complying with the ASIN Law and the factors that affect the utilization of iodized salt were documented. The current status of regulation and quality assurance of the food processing industry vis a vis iodized salt were also explored.

The survey among salt repackers was planned to include the major salt repackers in the country and the selected salt repackers selling in Region 3. However, due to the refusals of both major and Region 3 salt repackers to participate in the survey, the respondents were limited to six salt repackers located in Metro Manila, Bulacan and Cagayan de Oro. These were the only salt repackers who



agreed to participate in the survey out of the 33 companies who were approached for the survey. The survey among the salt repackers documented the market behavior, distribution and sources of the repacked salt. The views of the salt repackers on how to effectively control the quality of salt they repack and the strategies for an effective campaign on iodized salt were also solicited.

This report will only cover the results of the survey among food processors. The results of the survey among salt repackers will be discussed in a separate report.

Objectives

1. Identify the food processors covering at least 50% of the market share of the following food products: instant noodles, bread (including pandesal), canned corned beef, crackers, fish sauce, soy sauce, canned fish / sardine and hotdog. Local food processors of artisanal bread, pork longganisa, tamban tuyo, bagoong alamang, and bagoong isda would also be identified.
2. Estimate the total amount of salt used to process the identified target foods by the food processors identified in objective 1.
3. Verify with the food processors the consumption of salt per type of food. Inquire if there are other food products that they manufacture that use significant amounts of salt.
4. Estimate per capita consumption and population reach (total and estimates by region where possible) of each food category.
5. Determine whether and how these food processors check the concentration of iodine in the iodized salt they procure (certificate of analysis, use of test kits, titration, etc.).
6. Where possible, determine what % of salt used in the target food is iodized (and if possible) what % is adequately iodized – according to Certificate of Analysis/internal checks if available.
7. Determine the factors which contribute to the use of iodized/non-iodized salt in the food products.
8. Determine the knowledge of the key personnel (deciding on the use or non-use of iodized salt) about iodine, iodized salt, the salt iodization program, ASIN Law and the standards for iodization.
9. Determine if the food processors, when using iodized salt, indicate in their labels the use of iodized salt (and/or Sangkap Pinoy Seal for iodine).
10. Come-up with recommendations to increase the use of iodized salt in processed foods and for monitoring this.

Scope and Limitation of the Survey

The survey was limited to food processors who manufacture the identified brands listed in the market research database prepared by Euromonitor International [9]. Producers of the top selling brands of bread, soy sauce, fish sauce, crackers, instant noodles, canned fish or sardines, hotdog and canned



corned beef that cover 50% of the market share were targeted. Food products without data on the brands that represent 50% of the market share (artisanal bakeries, tamban tuyo, bagoong isda or ginamos, pork longganisa and shrimp paste or alamang) were also included. The targeted number of respondents for these food products was based on a computed sample size of 122.



Methods

The survey among food processors was conducted from October 2013 to April 2014. Onsite interview was done. However, two food processors preferred to self-complete the survey tool. The completed survey tools were returned either through fax or email.

Constructing the sampling frame

The survey participants were limited to the processors of soy sauce, crackers, instant noodles, canned fish or sardines, hotdog, tamban tuyo, bagoong isda or ginamos, canned corned beef, fish sauce or patis, pork longganisa, shrimp paste or alamang and bread, including pandesal. These food products were initially divided into two groups: a) food processors producing the identified brands making up at least 50% of the market share of the identified food products, and b) food processors of the identified food products where the market is likely to be dominated by unbranded food products or food products with no market share data. For the first group, all food processors meeting the criteria were included in the survey.

Food processors of the brands listed in the Euromonitor International Packaged Food in the Philippines 2013 database were included in the list of target respondents (**Table 1**). Data used by Euromonitor International was sourced from store checks (i.e. Puregold, SM Supermarket), food processors' companies (i.e. San Miguel Purefoods Co. Inc., Nissin-Universal Robina Corp., Century Canning Corp.), industry associations (i.e. Philippine Federation of Bakers Association Inc., Philippine Associations of Meat Processors, Inc.) and national statistics offices (i.e. National Statistical Coordination Board, National Statistics Office). The brand share ranking was based on total cost of local sales of the food products or food brands in Philippine Pesos. From the database, food brands that made up 50% or more than 50% of the market share were included in the list.



Table 1. List of major brands targeted for the survey based on Euromonitor International market research report [9]

Food Product	Company Name	Brand Name	Peso Market Share, %
Bread	Gardenia Philippines Inc.	Gardenia	21.2
	Goldilocks Bake Shop Inc.	Goldilocks	11.3
	MLM Foods Inc.	Fortune	7.1
	not specific	Artisanal bakeries ^a	50.7
Crackers	Monde Nissin Corp.	Sky Flakes	46.5
	Universal Robina Corp.	Jack n' Jill Magic Flakes	22.7
	Republic Biscuit Corp.	Rebisco	7.0
Instant noodles	Monde Nissin Corp.	Lucky Me	66.5
	Universal Robina Corp.	Payless	21.3
Canned corned beef	Pacific Meat Company Inc.	Argentina	39.0
	San Miguel Purefoods Co. Inc.	Purefoods	29.3
	CDO Foodsphere Inc.	CDO	12.5
Canned fish	Century Canning Corp.	555	29.3
	Century Canning Corp.	Century	25.0
	A. Tung Chingco Trading	Ligo	19.0
	Maunlad Canning Corp.	Youngstown	12.5
Hotdog	San Miguel Purefoods Co. Inc.	Purefoods	49.3
	CDO Foodsphere Inc.	CDO	17.0
	not specific	Others	23.3
Fish sauce	Lorenzana Food Corp.	Lorins	23.5
	Nutri-Asia, Inc.	DatuPuti	23.0
	Tentay Foods & Sauces Inc.	Tentay	20.5
	not specific	Others	33.0
Soy sauce	Silver Swan Manufacturing Corp.	Silver Swan	33.1
	Nutri-Asia, Inc.	DatuPuti	32.2
	Pinakamasarap Corp	MarcaPina	8.8

For those food products with no market share data, a list of known provinces that manufacture the food products were first prepared (**Appendix 1: Table 1**). The Health Offices and Department of Trade & Industry (DTI) of the identified areas were requested for a list of food processors producing the specific food products. Other food industry listings such as DTI Business Name Registration System and National Meat Inspection Service (NMIS) Accredited Meat Processing Plant were also utilized. However, not all agencies provided copies of the requested lists (**Appendix 2**). Further, upon verification of the received lists, the following limitations were encountered: a) inclusion of non-operational establishments, b) inclusion of food product retailers, and c) restriction of the list to



registered food processors. Thus, in majority of the identified areas producing food products with no market share data, the Project Team conducted a survey without a listing of the targeted food processors. Possible respondents were only identified and approached during the time of the field surveys.

Review of the Euromonitor International database showed that non-specific brands of fish sauce and hotdog (chilled processed meat) classified under “Others” have significant market shares at 33.0% and 23.3% of their respective product category [9]. Thus, it was decided to include minor brands of fish sauce and hotdog in the survey. These respondents were classified under minor market share. On the other hand, artisanal bakeries or community bakeries that bake bread daily, were included in the survey because they have a total of 50.7% market share for bread in 2012 [9]. However, no listings of fish sauce and hotdogs categorized as others and artisanal bakeries were made prior to the field survey due to lack of data. Instead, areas where these food processors would be surveyed were identified based on either of the following: a) area is a known producer of the product, b) the Project Team is in the area to survey other respondents (**Appendix 1: Table 2**).

Sample size for food products with no market share data

In determining the targeted number of respondents for the food products without market share data, a sample size was computed to provide a relative error in the estimation of mean parameters within 5% of the true value with 95% level of confidence. In the absence of information on the variability of the study variables, the assumed value of the coefficient of variation (CV) used for sample size calculation was 20%. The calculated sample size requirement for a simple sampling design was 61 food processors. To adjust for the design effect of the cluster sampling design, the sample size was multiplied by 2.0. Thus, at least 122 food processors were needed to meet the specified precision level of the estimates for each food product without market share data.

Due to the lack of market share data among artisanal bakery brands and brands of hotdog and fish sauce with minor market share in the country, the same sample size of 122 was also targeted in searching for respondents among these food processors.

Sampling method

The original sampling method planned for the food products without market share data was to allocate a substantial proportion of the sample size for large-scale food processors of these food products to ensure the inclusion of bigger units in the population. However, the absence of



centralized listing of food processors of artisanal breads, tamban tuyo, bagoong isda, alamang and pork longganisa and the lack of data on their volume of production did not allow this. Instead, non-probability sampling similar to the snowball technique was used. In snowball sampling, one begins by identifying a respondent who meets the criteria for inclusion in the study [10]. The respondent would then be asked to recommend others they may know who would also meet the criteria.

A letter informing the LGU of the planned survey was either sent or brought to the areas. Courtesy calls were conducted to the Local Chief Executives and / or Officers. From these visits, information on the locations of food processors and / or known food processors included in the survey was gathered. Once a food processor was approached, referrals of other similar food processors were requested. Based on this information, other possible respondents were sought and approached for the survey.

Food consumption

Available data from FNRI on per capita food consumption and frequency of food consumption per day [3] were used to estimate per capita consumption of the selected food products. Available data on food consumption from Euromonitor [9] were also compared with the data from FNRI. It was planned to use food consumption data from the 2013 NNS. However, the availability of these data were delayed so an average of the two data sources above was used where it seemed appropriate to estimate per capita consumption.

Hiring and training of project staff

Upon approval of the proposal, Project staff was hired. All project staff were oriented and trained. Training included the following: basic interviewing skills, familiarization and accomplishment of the data collections tools, editing and validation of responses and data encoding.

Development and pre-testing of data collection tool

The survey tool were developed, pre-tested and revised. The survey tool was divided into five parts: a) company profile, respondents' profile and food product, b) awareness on iodized salt, c) salt profile per food product, iodized salt checking and use and food product labeling, d) knowledge on the Philippine Salt Iodization Program, and e) sample collection [Appendix 3]. The tool included general information regarding the company: name, proprietor, address, years of operation, number of employees and food products being produced. They were also asked to identify contributing and



hindering factors for their usage of iodized salt, if any. Further, questions on quality control practices, target market, market share and marketing strategy used to promote iodized food products and profit impact of using iodized salt as an ingredient were included.

A guideline on how to accomplish the survey tool and on how to code responses was developed to aid the Project Team.

Data collection

The primary method used for data collection in both surveys was face-to-face interview. However, there were two instances where respondents refused on-site interview and requested to self-complete the tool instead. A copy of the tool was given. Completed tool were returned either through fax or email.

Quantitative iodine assay

The amount of iodine in the final food product would be dependent on the quantity of iodine in salt used and the losses during processing. Using a questionnaire to determine quantity of iodine in salt used as ingredient during food processing would be unreliable because of respondent bias. Thus, it was deemed important to have an objective laboratory measure of the salt currently in use within the food processing site. A quantitative assay was preferred because this allows us to estimate the quality of the iodized salt used.

At least 50 grams of salt samples used for food processing was requested from the respondents. Generally, respondents provided their own salt samples. Salt samples were packed in a plastic bag, placed in a brown bag and labeled by the Project Staff. Repacked salt samples were bought from the market during the market survey. Salt samples collected from both food processors and salt repackers were analyzed using iCheck IODINE (BioAnalyt GmbH, Germany), a portable photometer used to determine iodine concentrations in iodized salt, by a trained Food Technologist at NCP. All collected samples were coded for anonymity of source.



Data processing and analysis

Data were encoded using a formatted database (FileMaker, Inc. California, USA). Tabulations and summary statistics were done using STATA version 9 (StataCorp. LP, Texas, USA). Answers to open ended questions were qualitatively analyzed to categorize answers into common themes.



Results and Discussions

Registry of food processors

The lack of a complete registry for food processors affected the sampling plan of the survey and the actual data collection. The following problems were encountered during preparation of the master list: 1) lack of registry in the area even though the area is a known producer of the food product, 2) inclusion of food processors in the submitted registry even though the company has been closed for several years, 3) misclassification, i.e. listed as processor but are only retailers or distributors, and 4) the lack of common data storage or personnel handling list of food processors at the local government units (LGUs) that led to pinpointing of resource person.

It was observed, at least in the areas visited, that LGUs are aware who and where the food processors are in their area, regardless of their business registration status. Despite this, no registries are available. Thus, it is recommended that a database of all food processors, regardless of registration status and operational size, be created and maintained. The following information should be included in the database: complete company name, owner, contact person, contact details, produced food product and volume of production. This database should be controlled by a specific agency to streamline data entries, editing and requests. The database can be used to conduct monitoring of all food processors regardless of business registration status.

Regions included in the survey

The following were the Regions included in the survey: NCR, Ilocos, Central Luzon, Calabarzon, Central Visayas, Western Visayas, Northern Mindanao and Zamboanga Peninsula (**Figure 1**).

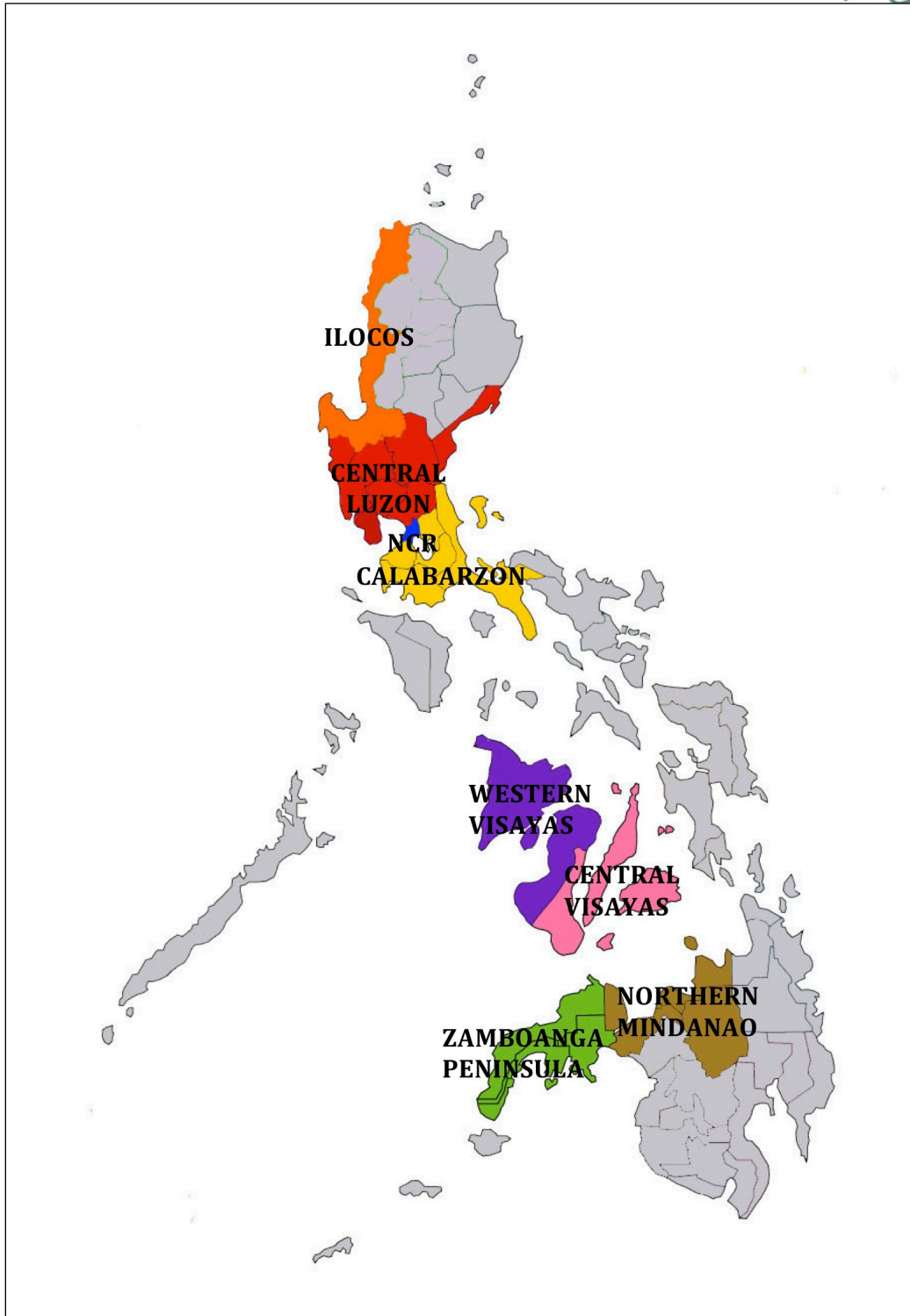


Figure 1. Philippine map showing the regions included in the survey



Company profile

A total of 578 food processors agreed to be surveyed (**Table 2**). Of these interviewed food processors, 11 food processors produced brands of food products with major market share (makes up at least >50% of the market share), 39 were producing brands with minor market share while 528 were producing food products with no market share data. Three food processors with major market share, 25 with minor market share and 41 with no market share data interviewed produced more than one food product included in the survey.

Table 2. Number of interviewed food processors by market category and number of produced food products included in the survey

Market Share	Number of food products, N				Total
	One	Two	Three	Four	
Major	8	2	0	1	11
Minor	14	24	1	0	39
No data	487	33	8	0	528
Total	509	59	9	1	578

Location of interviewed food processors by province

Food processors producing the major brands of fish sauce, canned corned beef, soy sauce, instant noodles and hotdog were mostly in Luzon provinces and NCR (**Figure 2**). Food processors with no brand share data and those producing brands with minor market share were located mostly in the provinces of Luzon (**Figures 3 and 4**).

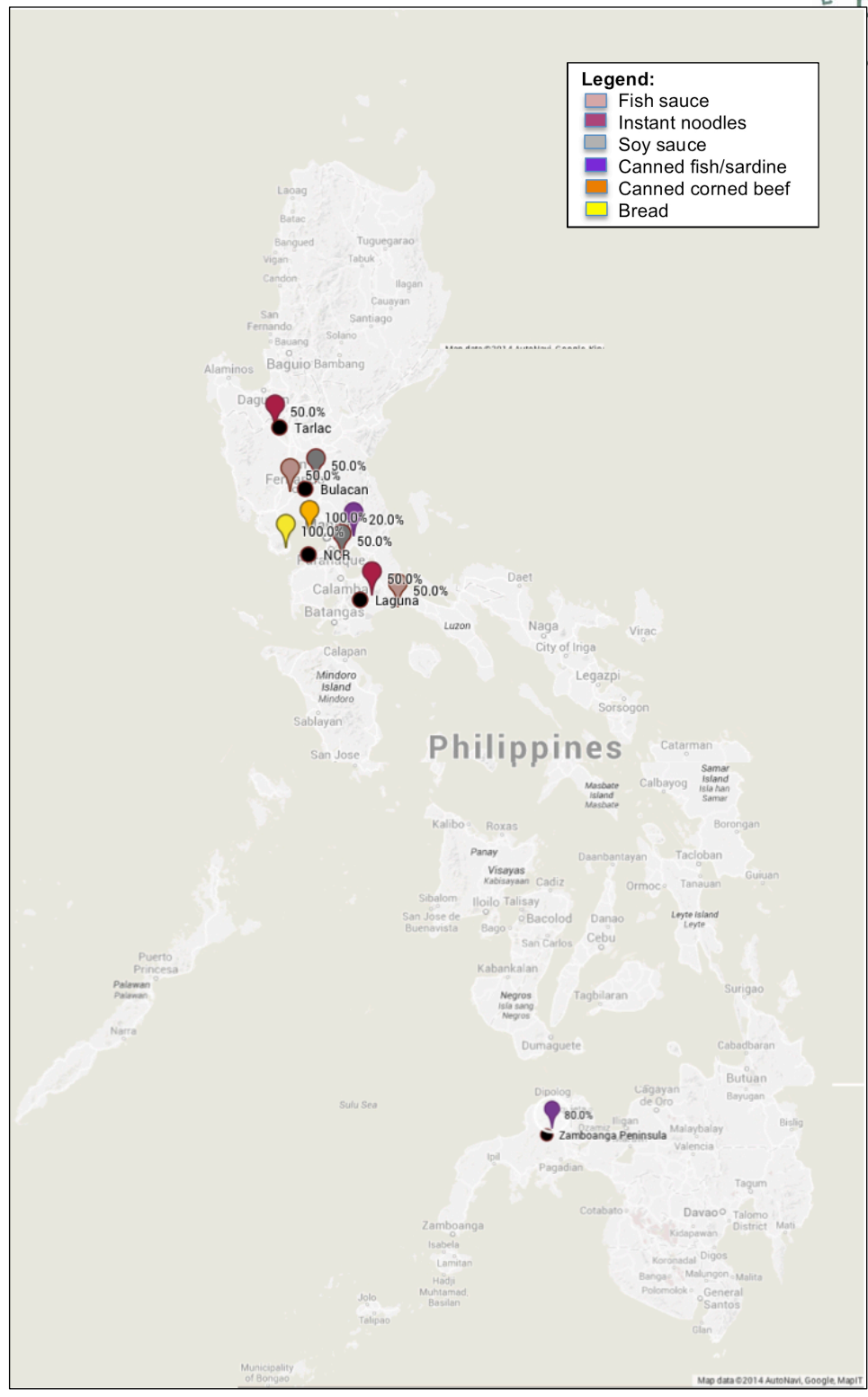


Figure 2. Location of interviewed food processors producing food brands with major market share

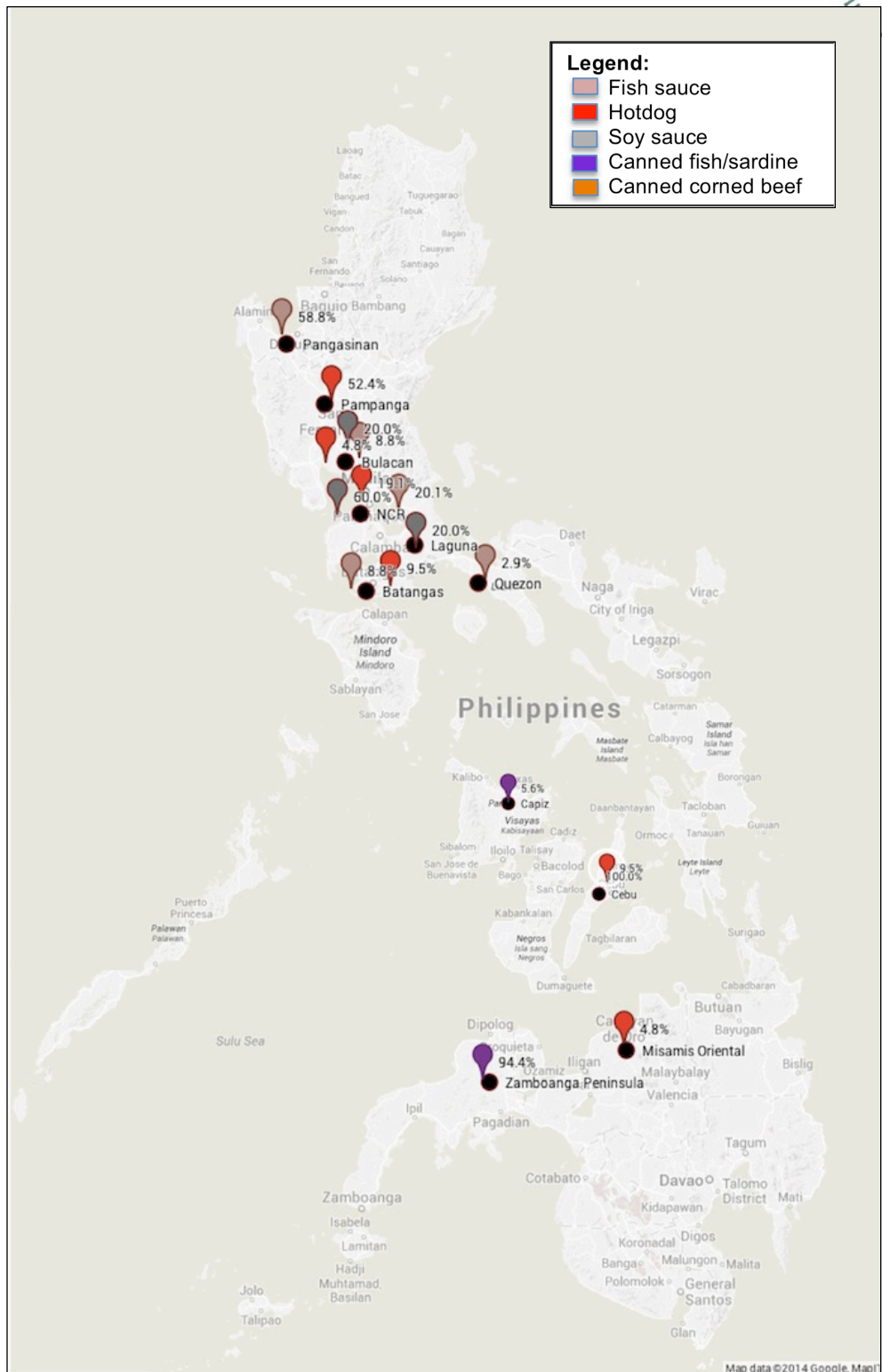


Figure 3. Location of interviewed food processors producing food brands with minor market share

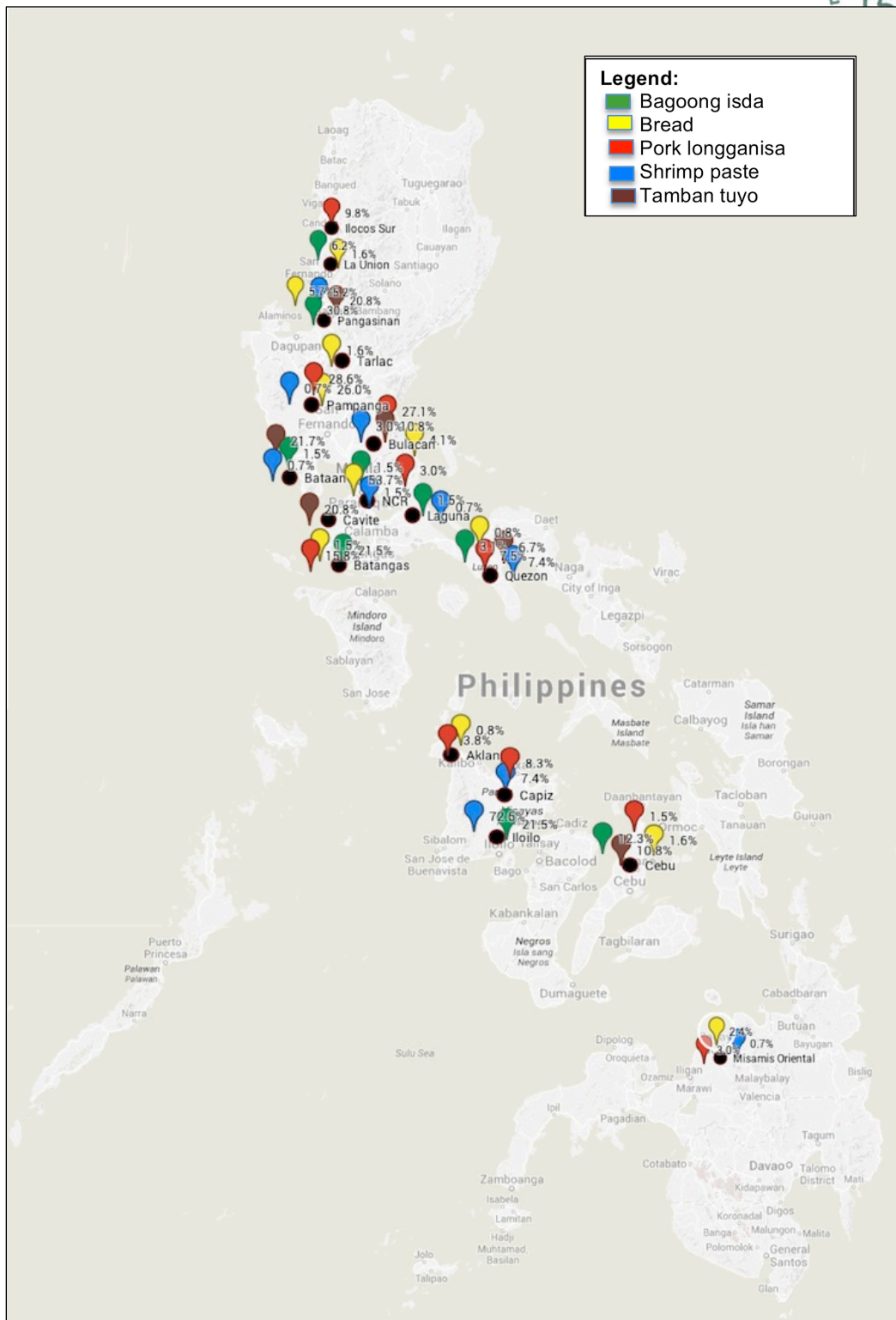


Figure 4. Location of interviewed food processors with no market share data



Business Registration and License to Operate

Food processors were asked if their company has an updated business registration at the time of the survey (**Table 3**). A copy of the document must be shown to the Project Staff for validation. However, no validation of their business registration was done on the two respondents (food processors with major market share) who self-completed the survey tool. More than half (312) of the food processors in all three market share categories claimed to have business registration but did not show supporting documents at the time of interview.

There were surveyed food processors of food products that do not have Business Registration and / or License to Operate. Majority of food processors of tamban tuyo, bagoong isda, bagoong alamang, pork longganisa and artisanal breads were unregistered and unlicensed.

Respondents would claim that they do not have a copy of the documents. Further, 225 of the 578 respondents reported not having any business registration. This is expected among the food processors producing food products with no market share data. However, it is important to note that there were also food processors with minor (6) or major (3) market shares that reported not having business registration. In the course of the survey, some of these food processors claimed to have filed for a renewal of their business registration and up until the time of the survey, their application was still being processed.

Table 3. Number of food processors by market share and reported status of DTI business registration

Market Share	Status of DTI Business Registration, N				Total
	Not registered	Yes, document not shown ¹	Yes, document shown	Not known	
Major	3	6	2	0	11
Minor	6	30	3	0	39
No data	216	276	33	3	528
Total	225	312	38	3	578

¹includes the two respondents who self-completed the survey tool

Food processors were also asked on the status of the License to Operate (LTO) issued by FDA (**Table 4**). As with the business registration, Project Staff requested to see LTO document during the interview for verification. Food processors who have major and minor market shares mostly reported having an LTO but were not able to show a copy of the document (18 and 5, respectively). Most of the food processors producing food products with no market share data reported not having a LTO.



Table 4. Number of food processors by market share and reported status of License to Operate

Market Share	Status of License to Operate, N					Total
	Not registered	Yes, document not shown ¹	Yes, document shown	No answer	Not known	
Major	2	5	4	0	0	11
Minor	15	18	4	0	2	39
No data	339	172	7	2	8	528
Total	356	195	15	2	10	578

¹includes the two respondents who self-completed the survey tool

Awareness of iodized salt

Almost all of the food processors were aware of iodized salt regardless of market share category (Table 5).

Table 5. Number of food processors by market share and reported awareness of iodized salt

Market Share	Aware of Iodized Salt, N		Total
	No	Yes	
Major	0	11	11
Minor	0	39	39
No data	5	523	528
Total	5	573	578

Almost all (99%) respondents were aware of iodized salt. However, almost half of the respondents did not know the benefits to the population of using iodized salt, did not answer, or thought there were no beneficial effects. Further, only three reported the correct standard iodine concentration of 30 to 70 ppm in iodized salt

Food processors who reported awareness of iodized salt were asked what benefits of using iodized salt do they know (Table 6). Among all respondents, 277 declared that they did not know the benefits of using iodized salt, or did not answer or thought there were no beneficial effects. Among the respondents who did know of benefits, increased IQ and goiter prevention were the most commonly mentioned, regardless of brand share category. There were also beliefs that iodized salt usage has bad effects such as kidney illness or death. Benefits such as “to have a sexy body”; “control acidity”; “medicine for the heart”; and “prevent UTI” were also mentioned.



Table 6. Number of food processors who reported awareness of iodized salt by reported known benefits of iodized salt and market share

Known Benefits of Using Iodized Salt ¹	Market Share, N			Total responses
	Major	Minor	No data	
<i>Number of Food Processor</i>	11	39	528	578
<u>Correct</u>				
Increase IQ	5	13	102	120
Prevents goiter	3	12	105	120
Growth & development	0	1	37	38
Improve health	2	2	22	26
Improve food	0	0	8	8
Better than rock salt	0	0	6	6
Clean / Safe	0	1	4	5
Iodine source	0	1	5	6
Protection against IDD	2	0	2	4
Others	0	1	8	9
<u>Incorrect</u>				
Bad effect	0	0	5	5
No benefit	0	1	29	30
<u>Not known</u>	2	11	229	242
Total responses	14	43	562	619

¹multiple answers

The 573 food processors who were aware of iodized salt were further asked if they know the standard iodine level required in iodized salt (**Table 7**). Only 12 claimed they knew the iodine level in iodized salt and six of these were producers of brands of food products with major market share. However, when these 12 were further asked what was the standard iodine level, only three were able to give the correct standard of iodine level of 30-70 ppm. Six respondents reported the old standard levels (either 70-150 ppm or 20-70 ppm) while three gave no answers. Cited sources of information of the iodine level of iodized salt were the FDA, ASIN Law, salt supplier and Certificate of Analysis.



Table 7. Number of food processors who reported awareness of iodized salt by market share and knowledge of standard iodine level of iodized salt

Market Share	Claimed to Know Standard Iodine Level of Iodized Salt, N		Total
	No	Yes	
Major	5	6	11
Minor	36	3	39
No data	520	3	523
Total	566	12	573

Information dissemination on the standard iodine level of iodine in iodized salt seemed lacking. In the 2010 study of NCP on the internal and external quality assurance and control of salt producers and importers, only 11% were able to give the correct minimum iodine level while only 5.4% gave the correct maximum iodine level out of 74 respondents [14]. Unawareness of standard iodine level among salt users should be addressed since this unawareness might lead to supply of inadequately iodized salt to food processors. Mitigation strategy among food processors should include not just usage of iodized salt in food processing but demanding adequately iodized salt from salt suppliers.

Awareness of the Philippine National Salt Iodization Program and ASIN Law

Only 70 of the surveyed food processors reported awareness of the National Salt Iodization Program (NSIP) in the country (**Table 8**). Eight (8) of the food processors producing brands of food products with major market share were aware of NSIP. In contrast, majority (479) of the food processors of food products with no market share data were not aware of the program.

Table 8. Number of food processors by market share and awareness of National Salt Iodization Program

Market share	Aware of NSIP, N		Total
	No	Yes	
Major	3	8	11
Minor	26	13	39
No data	479	49	528
Total	508	70	578



Majority (72.7%) of food processors of food brands with major market share were aware of the NSIP while all were aware of ASIN Law. However, 53.8% of food processors of food brands with minor market share while almost all food processors of tamban tuyo, pork longganisa, and bagoong were not aware of both NSIP and ASIN Law.

All food processors of brands with major market share were aware of the ASIN Law. However, 21 of the food processors of brands with minor market share and 445 of food processors with no market share data were not aware of ASIN Law. The 112 food processors who reported awareness of ASIN Law were further asked what do they know about the law (**Table 9**). In all market share categories, most of the food processors (49.1%) reported that the law requires all salt used must be iodized. Others define ASIN Law as a law proclaimed by the then

President Fidel Ramos, a program by the government, a law that requires that salt should be clean and safe, or requires iodine fortification of salt. Twenty-nine (29) of the 112 food processors do not know the definition or content of the ASIN Law.

Table 9. Number of food processors who reported awareness of ASIN Law by market share and their known definition of ASIN Law

Known Definition of ASIN Law	Market Share, N			Total
	Major	Minor	No data	
All salt used must be iodized	6	9	40	55
Only IS should be used for food processing	2	2	5	9
Salt is beneficial to health	1	0	7	8
Others	1	4	5	10
Law is an additional burden	0	0	1	1
Not known	1	3	25	29
Total	11	18	83	112

The food processors that reported awareness of ASIN Law were also asked about their views or opinions regarding the law and NSIP (**Table 10**). The answers were categorized to either favorable, unfavorable, no views or just follow the law. Generally, those who had favorable views (28) on the law cited the

There were food processors (14.3%) who viewed ASIN Law as unfavorable to the food processing industry. Reasons cited were perceived incompatibility of iodized salt in manufacturing their food product (specifically for bagoong and tamban tuyo food processors), higher price compared with non-iodized salt and lack of study on the effect of using iodized salt on food products.



health benefits of using iodized salt, i.e. I like the law so that Filipinos would become smart, nourished and healthy. Those who had unfavorable views of the law gave varied reasons. Answers were either on 1) incompatibility of iodized salt with food processing (i.e. “Iodized salt is okay for daily consumption but not in shrimp paste”; “I do not find it useful since once heated, iodine will dissipate”; “Decreased quality of product when using iodized salt”); 2) high price (i.e. “If there is no money, no iodized salt”; “Additional burden”); and 3) lack of study prior to implementation of the law. Others said that they just follow since it is already an implemented law (i.e. “It’s the law so it must be followed”).

Table 10. Number of food processors that reported awareness of ASIN Law by market share and views on ASIN Law and NSIP

Market Share	Views on ASIN Law and NSIP, N				Total
	Favorable	Unfavorable	Follow law	No views	
Major	4	3	3	1	11
Minor	6	2	2	8	18
No data	18	11	4	50	83
Total	28	16	9	59	112

Strict enforcement of ASIN law, promotion of iodized salt use and exclusion of processed foods from the mandatory use of iodized salt were cited as suggested improvements in the ASIN Law. These were also cited as the needed support of the food processors so that they can follow ASIN Law.

Food processors of food brands with major and minor market share recommended strict monitoring of salt suppliers, rapid test kits (RTKs) being available at the iodized salt producers/suppliers, disallowing selling of rock salt and lowering prices of iodized salt to ensure the quality of iodized salt.

Food processors were further asked if they have any suggestions to improve ASIN Law or NSIP. Only 30 out of the 112 food processors gave suggestions. The main suggestions were enforcement of the law (1 major; 2 minor; 7 no market share data), exclusion of processed foods in the mandatory use of iodized salt (2 major; 2 minor; 5 no market share data), information dissemination on use of iodized salt (3 minor; 5 no market share data) and lower price of iodized salt (1 major; 1 minor; 5 no market share data).

When asked about support they felt they needed to follow the ASIN law/NSIP, 81 food processors did not respond or gave no suggestions. Of the 31 food processors that responded, the main suggestions were to strictly enforce the law (2 major; 4 minor; 1 no market share data) and promote iodized salt use (2 major; 3 minor; 2 no market

share data) would be the most helpful. Exclusion of food processors in the mandatory use of iodized



salt in food processing and reduction of price of iodized salt were again cited, mostly by food processors of bagoong alamang and tamban tuyo.

All food processors were asked what they would recommend to ensure quality of iodized salt from salt suppliers (**Table 11**). In all market share categories, in particular the food processors with known market share, strict monitoring of salt supplier was recommended. Other recommendations were “makers of iodized salt should have a tester; “do not sell rock salt if not allowed”; and “lower the price of iodized salt”.

Table 11. Number of food processors by market share and recommendations to ensure quality of iodized salt from suppliers

Recommendation	Market Share, N			Total
	Major	Minor	No data	
Strict monitoring of salt supplier	4	13	43	60
Others	3	5	16	24
Has no recommendations because company does not use IS	0	1	8	9
No answer	4	20	461	485
Total	11	39	528	578

Food product profile

Table 12 shows the targeted and the actual number of food products surveyed. Twenty-three (23) food brands with major market share were targeted for the survey. However, data were only collected from 13 food brands with major market share. No data from brands of crackers and hotdog with major market share were available due to refusals of the targeted food processors.

Canned corned beef, soy sauce and canned fish have respondents from brands with minor market share even though they were not included in the original targeted respondents. Their inclusion in the survey was because of the following reasons: 1) Sanitary Inspectors in Zamboanga City took the survey as an opportunity to visit all the fish cannery plants and thus accompanied the Project Staff during the field survey, 2) limited data on brands of canned corned beef with major market share was obtained, and 3) some food processors interviewed for other food products included information for



the soy sauce they also produced. One hundred twenty-two (122) food processors with no market share data were targeted for each food product. This sample size was met only for artisanal bread, pork longganisa and shrimp paste. Failure to meet the sample size was mainly due to refusals and to the following reasons: 1) nomadic or traveling food processors and 2) seasonal production.

Table 12. Summary of food products by target number of brands for interview and actual food products with data

Food Product	Target, N		Actual, N			Total
	Major	No data ¹	Major	Minor	No data ¹	
Bread	3	122	1	0	123	124
Crackers	3	-	0	-	-	0
Canned corned beef	3	-	1	1	-	2
Canned fish / sardines	4	-	5	18	-	23
Fish sauce	3	122	2	34	-	36
Hotdog	2	122	0	21	-	21
Instant noodles	2	-	2	0	-	2
Soy sauce	3	-	2	5	-	7
Pork longganisa	-	122	-	-	133	133
Shrimp paste	-	122	-	-	135	135
Bagoong isda	-	122	-	-	65	65
Tamban tuyo	-	122	-	-	120	120
Total	23	610	13	79	576	668

Annual production volume distributed to the Philippine markets

The food processors were requested for the volume of their food products distributed to the Philippine market in a year (**Table 13**). Eight food products did not report their volume of production. The highest total volume of production for domestic markets was at 79,920 MT, as reported by processors of instant noodles. Soy sauce, canned fish and hotdogs were next. Among the food products with no market share data, bagoong isda reported the highest volume of production at 37,248 MT in a year followed by artisanal bread with 18,734 MT and shrimp paste with 17,978 MT.



Table 13. Reported total amount (in MT) of food products distributed in the domestic market in a year

Food Product	N	Volume, MT
<u>Major and minor</u>		
Instant noodles	2	79,920
Soy sauce	7	66,936
Canned fish	22	66,058
Hotdog	19	29,235
Fish Sauce	34	23,472
Bread	1	2,707
Canned corned beef	1	192
<u>No market share data</u>		
Bagoong isda	64	37,248
Artisanal bread	123	18,734
Shrimp paste	135	17,978
Pork longganisa	132	10,357
Tamban tuyoy	120	8,244

Available Euromonitor data on total volume sold at the domestic market were used to estimate the total volume per product category and per brand name (**Table 14**) [9]. Some of the food categories did not have separate information on the specific food products included in our survey. Canned corned beef was combined with luncheon meat and other similar canned preserved meat/processed meats. Crackers were grouped under savory biscuits and crackers; bread includes all types of bread produced industrially and packaged and bread produced artisanally; chilled processed meats are packaged processed meat (burgers, nuggets, sausages, frankfurters/hotdogs, bacon, and others) sold in the self-service of retail outlets; and canned preserved fish/seafood are cod, haddock, mackerel, sardines, tuna and others sold in cans, glass jars, aluminum/retort packaging, usually preserved in oil, brine, salt water or with a sauce. Also included in the table are the volumes per selected brands sold in the domestic market in year 2012. It was estimated by dividing the total sales of the brand by its price per kilogram as reported by Euromonitor.

An estimated 209,500 MT of bread was sold in Philippine domestic markets in 2012. Euromonitor data show that most of the bread sold in 2012 came from artisanal breads. Unbranded fish sauces,



soy based sauces and chilled processed meat, where hotdogs were included, have a significant market share in the domestic market.

Table 14. Estimated amount (in MT) of food products sold in the domestic market in 2012 based on Euromonitor data

Food Products	Total volume, MT	Volume per brand, MT
Bread	209,500	
Gardenia		35,210
Goldilocks		16,480
Fortune		11,870
Artisanal		84,320
Instant noodles, pouch	172,400	
Lucky Me		97,570
Payless		35,350
Quick Chow		4,190
Savory biscuits and crackers	62,600	
Sky Flakes		27,480
Magic Flakes		14,160
Fita		6,720
Rebisco King Flakes		4,920
Soy based sauces	102,500	
Silver Swan		29,600
Datu Puti		24,300
Marca Pina		6,550
Others / Unbranded		9,120
Fish sauces	7,900	
Lorins		1,670
Datu Puti		1,630
Tentay		1,550
Others/Unbranded		2,500
Canned preserved fish / seafood	129,900	
555		46,950
Century		16,530
Ligo		30,450
Youngstown		20,490
Master		8,340



Food Products	Total volume, MT	Volume per brand, MT
Chilled processed meat (including hotdog)	112,200	
Purefoods		33,740
CDO		16,930
Swift		3,820
Others / Unbranded		20,220
Canned preserved meat / meat products (including canned corned beef)	64,900	
Argentina		13,080
Purefoods		5,370
CDO		7,690
Maling		6,270
Swift		2,280

Areas of distribution

Eleven (11) of the food brands with major market shares included in the survey were distributed nationwide (**Table 15**). The brand of bread with major market share claimed to limit product distribution in Luzon while one fish sauce food processor claimed distributing only in Luzon and Visayas.

The lone brand of canned corned beef and 16 brands of canned fish with minor market share reported nationwide distribution. Brands of fish sauce and hotdogs with minor market shares were mostly distributed in Luzon while soy sauce was either distributed nationwide or in Luzon only.

Almost all food brands with major market share were distributed nationwide. Food brands with minor market share were either distributed nationwide or in Luzon areas only. Food products with no market share data were usually distributed in areas near their production site.

Distribution of food products with no market share data was influenced by where these food products were produced. Majority of the artisanal bread was distributed in NCR and in Luzon. Most of the artisanal bakeries interviewed were located in NCR and Luzon. Pork longganisa, bagoong isda and tamban tuyo were distributed mostly in Luzon while shrimp paste was distributed in the Visayas where these food products were mostly produced. Only 12 of these food products reported nationwide distribution.



Table 15. Number of food products by reported distribution areas in the Philippines

Food product	Areas of Distribution, N								Total
	Nation wide	NCR	Luzon	Visayas	Mindanao	Luzon & Vis	Vis & Min	Luzon & Min	
Major									
Bread	0	0	1	0	0	0	0	0	1
Canned corned beef	1	0	0	0	0	0	0	0	1
Canned fish	5	0	0	0	0	0	0	0	5
Fish sauce	1	0	0	0	0	1	0	0	2
Instant noodles	2	0	0	0	0	0	0	0	2
Soy sauce	2	0	0	0	0	0	0	0	2
Minor									
Canned corned beef	1	0	0	0	0	0	0	0	1
Canned fish	16	0	0	1	0	0	1	0	18
Fish sauce	6	1	26	0	0	0	0	1	34
Hotdog	4	1	14	0	1	0	1	0	21
Soy sauce	2	0	2	0	0	1	0	0	5
No market share data									
Artisanal Bread	3	60	53	1	3	2	1	0	123
Pork longganisa	4	7	110	2	4	3	2	1	133
Shrimp paste	2	0	22	97	1	9	3	1	135
Bagoong isda	0	1	39	20	0	4	0	1	65
Tamban tuyoy	3	33	61	18	0	5	0	0	120
Total	52	103	328	139	9	25	8	4	668

Consumer class

The respondents were asked to which consumer class their food products cater. Consumer classification was based on the Social Weather Station socioeconomic class definition [15]. Consumer classification was based on average annual income: those belonging to classes A & B earn PhP 1,857,000.00 or higher; class C earns at least PhP 603,000.00 to less than PhP



1,857,000.00; class D earns at least PhP 191,000.00 to less than PhP 603,000.00; and class E earns at least PhP62,000.00.

Three hundred sixty-one food producers (3 major; 44 minor; 314 no market share data) surveyed do not know their target consumer class (**Table 16**). The brand of canned corned beef with major market share targets only consumer classes A, B and C. The brand of canned corned beef with minor market share target all consumer classes. Most artisanal bread, pork longganisa, bagoong isda and tamban tuyo producers target consumer classes C, D and E while shrimp paste producers target consumer classes B, C and D.

Table 16. Number of food products by reported targeted consumer class

Food product	Number of food product	Consumer Class ¹					Not known	Total responses
		A	B	C	D	E		
Major								
Bread	1	0	1	1	0	0	0	2
Canned corned beef	1	1	1	1	0	0	0	3
Canned fish	4	0	1	3	2	2	2	10
Fish sauce	2	2	2	2	1	0	0	7
Instant noodles	2	1	1	2	2	1	0	7
Soy sauce	2	1	1	1	1	0	1	5
Minor								
Canned corned beef	1	1	1	1	1	1	0	5
Canned fish	18	1	3	3	1	1	15	24
Fish sauce	34	5	7	12	13	7	19	63
Hotdog	21	10	13	12	11	10	7	63
Soy sauce	5	1	2	2	1	0	3	9
No market share data								
Artisanal bread	123	28	36	64	54	48	58	288
Pork longganisa	133	28	41	44	47	44	81	285
Shrimp paste	135	23	28	31	29	23	102	236
Bagoong isda	65	21	26	31	34	31	29	172
Tamban tuyo	120	21	26	55	70	48	44	264
Total responses	668	144	190	265	267	216	361	1443

¹multiple answers



Types of salt used

Food processors use both iodized and non-iodized salt. Food products with major market share usually used imported salt, food products with minor market share used vacuum dried salt and food products with no market share data use local solar salt.

When respondents were asked about the types of salt used per food product were asked, it was found that some food products use multiple types of salt (**Table 17**). The salt used were classified into either local solar, imported solar, cooked and pure vacuum dried. However, some respondents do not know the specific type of salt used in their products, only that it was either coarse / rock or refined. No samples were received from these respondents (1 major; 1 minor; 51 no market share data) thus determination of whether the salt they claimed to use were either local, imported, pure vacuum dried or cooked was not possible.

The brand of bread with major market share reported using pure vacuum dried salt while brands of canned corned beef and fish sauce with major market share used imported solar salt only. All brands of canned fish with major market share used pure vacuum dried salt. Instant noodles used local solar, imported solar and pure vacuum dried salt. Soy sauce producers used imported solar and vacuum dried salt.

Thirteen (13) out of 18 brands of canned fish and 17 out of 21 brands of hotdog with minor market share reported using pure vacuum dried salt. Brands of fish sauce with minor market share usually use local solar salt while soy sauce use imported solar salt or vacuum dried salt. Most shrimp paste, bagoong isda and tamban tuyo reported using local solar salt. Artisanal bread and pork longganisa usually used pure vacuum dried salt, local solar salt and imported solar salt. Shrimp paste, bagoong isda, and tamban tuyo used local solar salt.

Table 17. Number of food products by reported type of salt used during food processing

Food product	Number of food product	Type of Salt Used ¹ , N						Total responses
		Local solar	Imported Solar	Cooked	Vacuum dried	Coarse, unknown	Refined, unknown	
Major								
Bread	1	0	0	0	1	0	0	1
Canned corned beef	1	0	1	0	0	0	0	1
Canned fish	4	0	1	0	4	0	0	5



Food product	Number of food product	Type of Salt Used ¹ , N						Total responses
		Local solar	Imported Solar	Cooked	Vacuum dried	Coarse, unknown	Refined, unknown	
Fish sauce	2	0	3	0	0	0	0	3
Instant noodles	2	1	1	0	1	0	0	3
Soy sauce	2	0	2	0	1	1	0	4
Minor								
Canned corned beef	1	0	1	0	1	0	0	2
Canned fish	18	1	4	0	13	0	0	18
Fish sauce	34	22	8	9	6	1	0	46
Hotdog	21	0	5	2	15	0	0	22
Soy sauce	5	0	3	0	2	0	0	5
No market share data								
Artisanal bread	123	38	14	6	62	3	3	126
Pork longganisa	133	46	18	9	41	15	6	135
Shrimp paste	135	98	11	2	4	3	21	139
Bagoong isda	65	49	5	10	10	0	0	74
Tamban tuyo	120	108	10	2	1	0	0	120
Total responses	668	365	83	34	169	23	30	704

¹multiple answers due to food processors using multiple types of salt

Reported sources /supplier of salt

Seven food brands with major market share surveyed reported sourcing their salt from Arvin International (**Table 18**). Five food brands with major market share mentioned Artemis while one mentioned Salinas. Twenty-one food brands with minor market share surveyed also mentioned Arvin International as their salt supplier. The majority of brands (28 of 46) of fish sauce with minor market share reported sourcing their salt within their area. Most of the processors of fish sauce surveyed were located either in Pangasinan, a salt producing province, or in Malabon City, an area where salt warehouses are located.

Arvin International was the common supplier of salt of food brands with major and minor market shares. Food products with no market share data source salt from public markets, groceries or suppliers from local areas.



Food products with no market share data usually source their salt from public markets, groceries or from suppliers within their area. Shrimp paste and bagoong isda producers used salt sourced from their own areas since most of them were located in salt producing areas. Others reported that salt used came from provinces or municipalities outside of their areas (i.e. Bataan food processors buying salt from Pangasinan or Bulacan; Hagonoy food processors buying salt from Bulacan, Bulacan).

Table 18. Number of food products surveyed by reported source/supplier of salt

Food Product	Source/Supplier ¹ , N								Total
	Within area	Outside area	Outside country	Arvin	Salinas	Artemis	Other suppliers	Not known	
Major brands									
Bread	0	0	0	1	0	0	0	0	1
Canned corned beef	0	0	0	1	0	0	0	0	1
Canned fish	0	0	0	2	0	2	1	0	5
Fish sauce	0	0	0	1	0	2	0	0	3
Instant noodles	0	0	2	1	0	0	0	0	3
Soy sauce	0	0	0	1	1	1	0	1	4
Minor brands									
Canned corned beef	0	0	0	1	0	0	0	1	2
Canned fish	0	0	0	12	0	0	3	3	18
Fish sauce	28	2	2	3	3	3	1	4	46
Hotdog	3	4	1	3	1	0	6	4	22
Soy sauce	0	0	0	2	2	1	0	0	5
No brand share data									
Artisanal bread	67	20	2	5	1	0	22	9	126
Pork longganisa	81	11	0	2	1	0	17	23	135
Shrimp paste	122	10	2	0	0	1	1	3	139
Bagoong isda	63	6	2	0	0	0	2	1	74
Tamban tuyo	33	85	0	0	0	0	0	2	120
Total	397	138	11	35	9	12	51	51	704

¹multiple answers due to food processors using multiple types of salt sourced from different suppliers



Reported required iodine concentration in supplied salt

The food processors surveyed were asked on what was the iodine concentration they ordered from their salt supplier (**Table 19**). One food brand (7.7%) with major market share reported using non-iodized salt thus does not require iodine in the salt supplied to them. Five of the 13 food brands with major market share reported requiring 30-70 ppm of iodine concentration in iodized salt. Only seven of the 79 food brands with minor market share surveyed reported 30-70 ppm of iodine concentration for their iodized salt. Twenty-six food brands with minor market share reported using non-iodized salt in their product. Among the food products with no market share data, majority (62%) reported using non-iodized salt. Only two artisanal bread makers reported requiring 30-70 ppm of iodine concentration in the iodized salt they use.

Table 19. Number of food products surveyed by reported ordered iodine concentration (in ppm) of salt used in food processing

Food product	Required Iodine Concentration, N				Total
	30-70 ppm	>70 ppm	Not known	Non-iodized salt	
Major					
Bread	1	0	0	0	1
Canned corned beef	0	1	0	0	1
Canned fish	0	0	5	0	5
Fish sauce	1	0	0	1	2
Instant noodles	1	0	1	0	2
Soy sauce	2	0	0	0	2
Minor					
Canned corned beef	0	0	1	0	1
Canned fish	4	0	14	0	18
Fish sauce	3	0	8	23	34
Hotdog	0	1	19	1	21
Soy sauce	0	0	3	2	5
No market share data					
Artisanal bread	2	1	93	27	123
Pork longganisa	0	0	64	69	133
Shrimp paste	0	0	35	100	135
Bagoong isda	0	0	14	51	65
Tamban tuyo	0	0	8	112	120
Total	14	3	265	386	668



Method used to check quality of supply of iodized salt

Most of the brands of food products with minor (51%) and major (77%) market shares reported using the Certificate of Analysis (CoA) of their salt suppliers to check the quality of iodized salt they purchased (**Table 20**). One food brand with major market share and 20 food brands with minor market share do not use any quality check method. Only one food product from each market share category reported using in-house titration method for quality check. One pork longganisa food processor claimed to have its own titration set-up. Majority (73%) of food products that reported using iodized salt do not use any quality check method to check iodine level of salt used.

Table 20. Number of food products surveyed that reported using iodized salt by reported method used to check iodine quality of iodized salt supplied to them

Food product	Number of food product ²	Method of Quality Check Used ¹						Total responses
		None used	CoA of supplier	CoA 3 rd party	In-house test kit	Titration	Not known	
Major								
Bread	1	0	1	0	0	0	0	1
Canned corned beef	1	0	1	1	1	0	0	3
Canned fish	4	1	4	0	0	0	0	5
Fish sauce	2	0	1	0	1	0	0	2
Instant noodles	2	0	2	0	0	1	0	3
Soy sauce	2	0	1	1	1	0	0	3
Minor								
Canned corned beef	1	0	1	0	0	0	0	1
Canned fish	18	4	13	0	0	0	1	18
Fish sauce	11	6	3	1	2	0	1	13
Hotdog	20	10	8	1	2	1	1	23
Soy sauce	3	0	2	0	0	0	1	3
No market share data								
Artisanal bread	96	86	8	0	0	0	2	96
Pork longganisa	65	50	8	0	1	1	5	65
Shrimp paste	35	35	0	0	0	0	0	35
Bagoong isda	14	14	0	0	0	0	0	14
Tamban tuyo	8	8	0	0	0	0	0	8
Total	282	214	53	4	8	3	11	293

¹multiple answers

²only 282 food processors reported using iodized salt as ingredient



Iodized salt checking and use

The food processors who reported using iodized salt were asked what actions their companies take if the supplied iodized salt does not meet their required iodine concentration (**Table 21**). Food processors of food brands with major market share cited that they either reject the salt delivered (3 of 9), change supplier (1 of 9) or test salt using in-house titration method (1 of 9). Of the 15 food processors of food brands with minor market share who performed quality check of iodine concentration and responded to the question, two rejected or complained to the supplier and two stopped ordering from that supplier. Four food processors in this market share category said they were not worried about the iodine concentration even if it was found to be outside their required range as long as it met their requirement for cleanliness and grain size. Those who reported no quality control method were further asked on what was the alternative method used for checking quality of iodized salt, all answered none.

Ten of the 12 food brands with major market share that reported using iodized salt cited referring to the Certificate of Analysis provided by their salt supplier to check the iodine concentration of the salt supplied them. Only half (51%) of the food brands with minor market share also used Certificate of Analysis of their salt supplier.

Table 21. Number of food processors by market share and by actions taken if iodized salt supply did not comply with required iodine concentration

Company Actions	Market Share, N			Total
	Major	Minor	No data	
Particular with grain size and cleanliness	3	4	4	11
Reject/complain	3	2	1	5
Stop ordering from supplier	0	2	0	2
Has not happened	1	1	1	3
Test by titration/RTK	1	0	1	2
Change supplier	1	0	0	1
No answer	1	6	5	12
Total	9	15	12	36

Almost all food processors of food products with no market share data do not have any quality control method. This must be considered when educating these food processors on iodized salt or when advocating for them to use iodized salt during processing. Most of these food processors source salt



from their local market, usually unpacked and unlabeled. At present, RTK is the simplest way to check for presence of iodine in salt. However, in reality, salt testing kits are not widely available, or if available, are limited to large companies and to LGUs. Further, RTK would only give qualitative results (whether salt was iodized or not) and not quantify iodine concentration which is crucial in determining whether iodine concentration in the salt was within standard or not. Validation studies also showed that RTK has low specificity in determining quality of iodization compared with titration method. [17-18] It might be necessary to explore other methods or devices to check for the concentration of iodine in salt supplied to them or from their local sources. Any method must consider the available resources and capacity of the all food processors. DOH, through FDA, should lead on developing a system to monitor the quality of iodized salt at the manufacturer or supplier's level in collaboration with the LGUs, Department of the Interior and Local Government (DILG) and other local enforcement agencies.

Most food processors of branded food products depended on the Certificate of Analysis provided by their salt suppliers. However, it is important to point out that there were food processors (in all market share category) that were not strict with the iodine concentration of their iodized salt. The CoA is primarily for checking for purity and grain size of the salt, iodine concentration is just secondary.

Estimated amount of salt used

Only 664 of the 668 food products surveyed provided data on the total volume of iodized and non-iodized salt used as ingredient in a year (**Table 22**). The brand of canned corned beef with major market share did not provide data on the amount of salt used as ingredient. Brands of soy sauce and instant noodles with major market share used the highest volume of total salt as ingredient. Bagoong isda used the highest volume of total salt followed by shrimp paste and tamban tuyo among those with no market share data.

Food processors of food brands with major and minor market shares reported that 85% of salt used as ingredient was iodized. Food processors of bagoong alamang, bagoong isda and tamban tuyo mainly used non-iodized salt.

Both brands of food products with major and minor market shares reported using a higher volume of iodized salt than non-iodized salt. Food products with no market share data used higher volume of non-iodized salt to iodized salt.



Table 22. Total estimated volume (in MT) of salt reportedly used as ingredients in a year by food products surveyed

Food Product	Number of food product	Volume, MT				Total
		Non-iodized salt		Iodized salt		
		Amount	%	Amount	%	
Major						
Bread	1	-	-	30.00	100.0	30.0
Canned corned beef	1	-	-	No data	-	No data
Canned fish	5	-	-	98.63	100.0	98.63
Fish sauce	2	240.92	8.54	2,580.00	91.46	2,820.92
Instant noodles	2	2,300.00	30.20	5,315.00	69.80	7,615.00
Soy sauce	2	No data	-	7,818.20	100.0	7,818.20
Minor						
Canned corned beef	1	-	-	6.00	100.0	6.00
Canned fish	18	36.00	0.59	6,083.28	99.41	6,119.28
Fish sauce	34	1,681.44	46.58	1,928.33	53.42	3,609.77
Hotdog	21	0.30	0.03	1,021.94	99.97	1,022.24
Soy sauce	5	315.38	48.64	333.00	51.36	648.38
No market share data						
Artisanal bread	123	16.88	0.94	1,777.40	99.06	1,794.28
Pork longganisa	133	47.5	4.21	1,081.66	95.79	1,128.81
Shrimp paste	134	2,169.46	57.61	1,596.29	42.39	3,765.76
Bagoong isda	64	7,551.63	90.59	784.12	9.41	8,336.52
Tamban tuyoy	120	3,724.36	99.33	25.18	0.67	3,749.54
Total	666	18,084.64	100.0	30,479.02	100.0	48,563.66

Imported solar salt had the highest volume of total salt used as ingredients by major brands of food products (**Table 23**). Vacuum dried salt had the highest volume of total salt used as ingredients by minor brands of food products. Local solar salt had the highest volume of total salt used as ingredients by the food products with no brand share data.



Table 23. Estimated total volume (in MT) of salt reportedly used as ingredients in a year by type of salt

Food Product	Number of food product	Volume, MT		
		Non-iodized salt	Iodized salt	Total
Major				
Local solar	1	-	715.00	715.00
Imported	5	2,540.92	10,406.09	12,947.01
Vacuum dried	7	-	4,720.74	4,720.74
Minor				
Local solar	20	1,340.19	45.04	1,385.23
Imported	16	597.16	2,242.51	2,840.39
Cooked	4	46.30	610.17	658.92
Vacuum dried	39	10.30	6,474.83	6,521.13
No market share data				
Local solar	326	12,377.22	858.26	13,235.48
Imported	53	374.16	956.92	1,331.07
Cooked	18	122.04	641.26	763.30
Vacuum dried	121	152.27	2,774.64	2,926.91
Coarse, unknown	26	484.92	0.43	485.35
Refined, unknown	30	-	33.14	33.14
Total	666	18,084.64	30,479.02	48,563.66

It is evident that significant amounts of salt are used by processors of fish sauce, tamban tuyo, bagoong isda, shrimp paste, canned fish, instant noodles, and soy sauce. However, majority of the tamban tuyo, bagoong isda and shrimp paste food processors admitted to using non-iodized or rock salt only.

The law required that all food processors utilize iodized salt in their products to increase availability of iodine to the population. However, because of the current practice of using non-iodized salt or inadequately iodized salt, food products might not contain the expected additional iodine that should be coming from iodized salt. Some food processors argue that their food products already contain iodine since their main ingredient is from the sea (tamban tuyo, bagoong isda and shrimp paste) and that the use of iodized salt is not necessary. A study by FNRI on the effect of iodized salt on the quality of selected processed foods showed that the iodine content of fermented fish and shrimp made with non-iodized salt only met 3% to 7% of the recommended daily iodine intake per 5 g

serving. This was considerably lower than the 49% and 97% of recommended daily iodine intake met thru eating 5 g of shrimp paste and fish paste prepared with iodized salt, respectively [18]. The use of iodized salt in food processing would significantly increase the iodine content of processed fish and shrimp.

Reasons for use or non-use of iodized salt

Iodized salt was used mainly because it was required by law or recommended by authority. The high price of iodized salt compared with non-iodized salt is a hindering factor for its wider use. The perceived adverse reaction of their product prevents its use among bagoong alamang and tamban tuyo food processors.

Food processors surveyed who reported using iodized salt were asked for their reasons in using it (**Table 24**). The majority of responses from processors in all market share categories was that iodized salt was used mainly because it was either required by law or recommended by authority. The good effect on health was cited as the next most important reason. Minor and no market share category processors also cited the salt being cleaner and safer as reasons for using iodized salt in their product. Food processors with no market share data, mostly artisanal bakeries, cited improved taste of

food, ease of using iodized salt, availability of iodized salt and iodized salt being the usual salt used during processing.

On the other hand, the high price of iodized salt when compared with non-iodized salt was the most cited reason of food processors with no market share data for not using iodized salt in their food products (**Table 25**). These food processors also cited that non-iodized salt or rock salt was the usual salt that they use during food processing, using iodized salt in their products (bagoong alamang and tamban tuyo food processors) resulted to rancidity and bitter taste of product, difficulty in using iodized salt (i.e. “Difficult to mix”, “Iodized salt is too salty”), and lack of iodized salt in their area.

Table 24. Number of food processors who reported using iodized salt by market share and reasons for using iodized salt

Reasons for Use of Iodized Salt ¹	Market Share, N			Total responses
	Major	Minor	No data	
<i>Number of Food Processor</i>	10	28	197	235
Required / Recommended	7	14	78	99
Good effect on health	3	6	26	37
Clean & safe	0	4	23	27



Reasons for Use of Iodized Salt [†]	Market Share, N			Total responses
	Major	Minor	No data	
Improves taste	0	2	17	19
Ease of use	0	3	14	17
Usually use	1	2	15	18
Availability	0	0	16	16
Effect on food product	0	0	7	7
Others	0	0	8	8
No answer	0	1	6	7
Total responses	11	32	210	253

[†]multiple answers

Table 25. Number of food processors who reported using non-iodized salt by market share and reasons for non-use of iodized salt

Reasons for Non-Use of Iodized salt [†]	Market Share, N			Total responses
	Major	Minor	No data	
<i>Number of Food Processor</i>	<i>1</i>	<i>11</i>	<i>331</i>	<i>343</i>
Price	1	4	106	111
NIS is usually used	0	2	68	70
Bad effect of IS on food product	0	4	54	58
Difficulty in using IS	0	0	53	53
NIS is more available	0	0	36	36
Better to use rock salt	0	0	19	19
NIS improves taste	0	0	10	10
Not to use on food product	0	1	8	9
As ingredient	0	0	7	7
Others	0	1	13	13
No answer	0	0	5	5
Total responses	1	12	379	392

[†]multiple answers



Views on using iodized salt in food processing

Food processors were asked for their views on the use of iodized salt during food processing. The lone food processor of major brand of food product who reported not using iodized salt cited the need for the law to consider the higher cost of iodized salt than non-iodized salt (**Table 26**). The most frequent response (27% of those who responded) among food processors with no market share data was that they have not tried using iodized salt and thus have no opinions on its usage. Twenty four percent (24%) of no market share food processors, mostly of bagoong isda, tamban tuyo and shrimp paste, cited the bad effect of iodized salt in their products (i.e. “Iodized salt does not melt and food product easily spoils”, “Food product has bitter taste”). The same opinions were given by food processors of minor brands of fish sauce.

Table 26. Number of food processors by market share and views on using iodized salt during food processing among those who reported using non-iodized salt only

Views on Iodized Salt Use ¹	Market Share, N			Total responses
	Major	Minor	No data	
<i>Number of Food Processor</i>	1	11	331	343
<u>On iodized salt</u>				
Never been used	0	1	90	90
Bad effect on product	0	5	81	86
Too salty	0	0	32	32
Price	0	1	27	28
Difficult to use	0	1	27	28
Should only be used by the households	0	0	16	16
Bad effect on health	0	0	8	8
Others	0	1	4	5
<u>On non-iodized or rock salt</u>				
Better to use	0	0	22	22
Good, safe & clean	0	0	16	16
Good effect on product	0	1	11	12
Preservative	0	1	8	9
Others	1	0	6	7
No answer	0	0	11	10



Views on Iodized Salt Use ¹	Market Share, N			Total responses
	Major	Minor	No data	
Total responses	1	11	349	361

¹multiple answers

Among food processors with no market share data who reported using iodized salt in their products, 40% (10% major; 25% minor; 44% no market share data) said that iodized salt has good effects on or improved the taste of their products (**Table 27**). This was in contrast with the opinions of those who were not using iodized salt (**Table 26**). Iodized salt was preferred because it is thought to be cleaner and safer than rock salt (18% no market share and 39% minor market share). Examples of other responses from no market share food processors include: iodized salt is safe and clean (18%). Further, there were respondents who said that iodized salt was not different to rock salt (7% of food processors with both no market share and minor market share). Although food processors of food products with no market data claimed to use iodized salt, the difficulty of using or measuring iodized salt was cited as a disadvantage of using it.

Table 27. Number of food processors by market share and views on using iodized salt during food processing among those who reported using iodized salt

Views on Iodized Salt Use	Market Share, N			Total
	Major	Minor	No data	
Good effect on product	1	7	87	95
Good, safe & clean	2	11	35	48
Same as rock salt	0	2	13	15
Difficult to use than rock salt	0	0	13	13
Required / recommended	4	2	6	12
Bad effect on product	0	0	9	9
Too salty	0	0	7	7
Advantageous to consumers	0	3	2	5
Others	3	1	9	13
No answer	0	2	16	18
Total	10	28	197	235



The survey showed that iodized salt utilization of food processors varied according to the size of the company. Generally, large-scale food processors and those with business registration reported compliance to using iodized salt for food processing. In contrast, food processors of pork longganisa, shrimp paste, bagoong isda, fish sauce and tamban tuyo, food commodities that are usually processed by small to medium-scale food processors do not usually use iodized salt or would prefer to use rock or coarse salt. One of the reasons for non-compliance of these food processors was their claimed adverse effect of iodized salt on their products, either experienced by themselves or heard from others. This was evident among food processors of tuyo and bagoong, citing that their products spoil more easily when iodized salt is used or that they have unacceptable color or texture.

There was also the reported issue of the difficulty of using iodized salt: refined salt was difficult to measure compared to rock salt. The higher price of refined iodized salt compared with rock or coarse salt also discouraged small-scale food processors from using it. However, it was also encouraging to encounter processors of the same food products that reported using iodized salt and have positive experiences (“Adds to taste and it is clean”, “Good to the product, it makes it delicious”).

It was also evident from the interview responses that there were significant numbers of food processors that still identify iodized salt through grain size: refined salt is iodized while rock or coarse salt is non-iodized. Some of the responses were “Rock salt is still better than iodized salt”, “Refined salt takes too long to melt”, “Rock salt has more flavor”, “Rock salt is prohibited to sell”.

These observations reflect the limited knowledge of food processors with minor share and food processors of bagoong isda, bagoong alamang, tamban tuyo and fish sauce on the type of salt and the use of iodized salt in food processing. The belief that only refined salt is iodized and that coarse or rock salt is not, is a long standing belief not just by food processors but also by household consumers. Ideally, having only iodized salt available in the market (as mandated by ASIN Law) would address this problem. But in reality, this is not the case. Thus, it is necessary to continually educate the population on how to identify whether salt is iodized or not, and that refined salt does not always equate to iodized salt and that not all rock or coarse salt is non-iodized.

The contrasting experience of food processors using iodized salt against those who are not using iodized salt during food processing might have been brought about by the lack of information on how to properly use refined salt when substituted for coarse salt. This lack of knowledge on proper usage might have contributed to wrongly attributing adverse changes to the taste or quality of their product to iodized salt rather than to the grain size of the salt, since iodized salt is identified as refined salt only. Local, controlled studies on the effect of using iodized salt on the quality of dried fish and shrimp



paste have shown no adverse effects [15-16]. It is recommended to conduct information dissemination of the results of these studies among food processors to address some of the misconceptions identified. The opportunity should also be used to train food processors on usage, i.e. measurement of refined salt when substituting for coarse salt.



Food product labeling and addition of iodine to the product

Food processors who reported using iodized salt were asked whether the use of iodized salt was declared on their label (**Table 28**). All food brands with major market share surveyed declared the use of iodized salt in their ingredients list while only 20 food processors with minor market share does the same. Majority of food processors with no market share data do not use food labeling primarily because their products are not packed individually. Their products are more often marketed at the public markets and sold by “takal” or per kilogram.

All food brands with major market share declared the use of iodized salt in their ingredients list. Food products with no market share data more often do not pack their products individually thus had no labeling information available.

Table 28. Number of food processors by market share and declaration of iodized salt in their ingredients list

Market Share	Food Label Declaration, N			Total
	No label	No	Yes	
Major	0	0	10	10
Minor	1	7	20	28
No data	137	45	15	197
Total	138	52	45	235

Among food processors with minor and no market share data who did not declare use of iodized salt on their food label, 46% gave no reason for non-declaration of iodized salt use. The remaining 29 food processors gave the following reasons: claimed that they were still using the old packaging (19%), there is no need to declare it (22%), and other responses (13%) which included that they did not know that it has to be declared on their food label.

One surveyed food processor of soy sauce with major market share and one food processor of hotdog with minor market share reported adding iodine in their products. However, both did not declare the additional iodine on their food label. Food processors with no market share data do not add additional iodine to their products.

Results of iodine concentration determination using iCheck IODINE

Salt samples were requested from food processors during the interview. A trained Food Technologist analyzed the salt samples for iodine concentration using iCheck IODINE (BioAnalyt GmbH, Germany) at NCP. Analysis showed that more than half of the samples had iodine concentrations between 5 and 10 ppm (**Figure 5**).

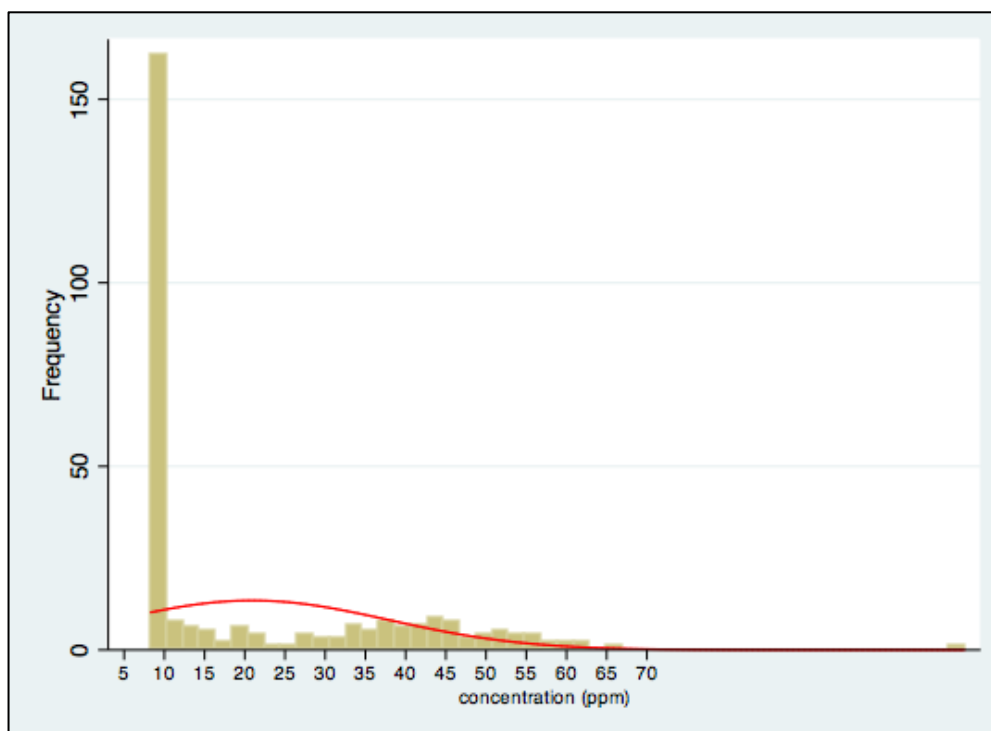


Figure 5. Distribution of salt samples based on iodine concentration measured using iCheck IODINE

The results were also categorized to either <10 ppm, 10 – 30 ppm, 30- 70 ppm or >70 ppm (**Table 29**). Results of the analysis showed that 69 of the 127 food processors who reported using iodized salt submitted salt samples with iodine concentrations between 30 - 70 ppm. Salt samples of three out of five food processors of brands of food products with major market share had iodine concentrations below 30 ppm, one of these had <10ppm iodine. Ten food processors of brands with



About 45% of salt sampled from food processors who reported using only iodized salt had iodine concentrations below <30 ppm. Three of these came from food processors of brands of food products with major market share. 12 of the 156 salt sampled from reported non-iodized salt users were determined to have iodine concentrations between 30 - 70 ppm.

minor market share and 44 food processors with no market share data who reported using iodized salt had salt samples with iodine concentrations <30 ppm.

Most salt samples (77.6% or 121 of 156) from food processors who reported using non-iodized salt had iodine concentrations between 10 to <30 ppm. Twelve food processors of food products with no market share data who reported using non-iodized salt had salt samples that have adequate iodine concentrations.

Table 29. Number of salt samples by iodine concentration determined through iCheck IODINE by reported use or non-use of iodized salt

Food Product	Iodine Concentration of Salt Samples, ppm				Total
	<10	10 - <30	30 - 70	>70	
Reported using iodized salt, N					
Major	1	2	2	0	5
Minor	4	6	16	0	26
No data	24	20	51	1	96
Sub-total	29	28	69	1	127
Reported using non-iodized salt, N					
Major	1	0	0	0	1
Minor	7	0	0	0	7
No data	113	23	12	0	148
Sub-total	121	23	12	0	156
Total	150	51	81	1	283

*<10 ppm was used as the cut-off because the distribution of the results of iCheck IODINE suggests that it is not sensitive to <8ppm iodine

The results of analysis of salt samples showed that there were food processors that reported using iodized salt but in actuality were using either non-iodized salt or inadequately iodized salt. This could mean either of the two things: the respondent gave the expected response during the interview (i.e. use iodized salt) or the respondent does not know that the salt was not iodized or was poorly iodized. Conversely, a few salt samples declared to be non-iodized were found to have adequate iodine



concentration, although these were all salt samples from food processors of food products with no market share data.

The limited monitoring of quality control system being practiced by salt producers/suppliers to check the iodine concentration of the salt they market contributes to this. The apparent disinterest of food processors to the iodine concentration of the salt they use is also contributory. Quality control is not the responsibility of the food processors alone. Instead it should be viewed as an obligation of suppliers to meet the requirements of their customers. Respondents constantly mentioned the need for strict enforcement of the law and continuous monitoring among salt suppliers. Thus, it is suggested that monitoring programs such as Bantay Asin Task Force and Patak sa Asin be revitalized. The FDA, being the lead agency in-charge of food safety and quality monitoring should strictly and regularly conduct monitoring of the quality of salt both at the food processors and salt producers/suppliers levels. The Bantay Asin Task Forces at the regional level can take the lead in conducting advocacy on salt iodization in the region and form a mechanism to assist the FDA in monitoring program implementation and addressing implementation problems and issues.

Per capita food consumption

Per capita food consumption per food product was based on available data from Euromonitor and NNS data (**Table 30**). Euromonitor reported per capita food intake in kg per year based on the total volume of food products sold per year. The available data was divided by 365 days and converted to gram to determine the daily per capita consumption. NNS data is the mean weight per day in gram in as purchased form. As purchased (AP) is the weight of the food as bought or harvested and may include the parts of the food not consumed or eaten. This is different from edible portion (EP) or edible weight which is the weight of food without the waste part or inedible portion. [20]

Bread had the highest per capita food consumption per day among the food products surveyed in both data sources (13.42 vs 11.00 gm/day). The differences between the per capita consumption from NNS and from Euromonitor for bread, instant noodles, savoury biscuits and crackers and soy-based sauces were not large. However, there was a large difference in the data for canned/preserved fish/seafood probably due to food categorization.



Table 30. Per capita consumption per day of the surveyed food products based on 2008 NNS [3] and Euromonitor International [9]

Food Category	Per Capita Consumption per Day, gm	
	Euromonitor 2013	NNS 2008, as purchased ^a
Bread	13.42	11.00
Instant noodles	4.93	4.00
Savoury biscuits and crackers	1.64	2.00
Soy based sauces	3.01	3.00
Fish sauces	0.27	Not available
Chilled processed meat ^b	3.29	Not available
Canned/Preserved meat and meat products ^c	1.92	Not available
Canned/Preserved fish/seafood ^d	3.56	8.00
Tamban tuyo	No data	Not available
Bagoong alamang	No data	Not available
Bagoong isda	No data	Not available
Pork longganisa	No data	Not available

^amean one-day

^bincludes hotdog

^cincludes corned beef

^dincludes sardines

Potential salt and iodine intake from surveyed processed foods

The potential salt and iodine intake from the surveyed processed food products was estimated using the following data: reported volume of product, reported volume of salt used, per capita consumption (**Table 30**) (either from FNRI or Euromonitor) and available iodine in the salt based on iCheck results (**Table 31**) and if salt contained at least 30 ppm iodine (**Table 32**). The formula below was used to determine the potential daily iodine intake per capita consumption of the food products.

Where $X_1 = \text{potential iodine intake from food product}$
 $a = \text{mean ratio of volume of salt used per product/volume of food product produced}$
(derived by dividing volume of salt used by volume of food product produced)
 $b = \text{per capita consumption of the food product}$
 $c = \text{mean iodine concentration in salt samples using results of iCheck IODINE}$

Formula $X_1 = (a \times b) \times c$



The potential iodine intake from the food product was computed under the assumption that the iodine in the salt would be fully available, i.e. no iodine was lost during food processing. Also, the potential iodine available was computed without including the possible iodine contributed by other ingredients to the end food product.

Using results of iCheck IODINE, instant noodles have the highest potential iodine contribution followed by bread and canned sardines (**Table 31**). Using Euromonitor data, if a Filipino adult consumed 7 of the 12 food products daily, he will be meeting at least 43% of his daily iodine requirement. If consumed individually, only instant noodles would have significant contribution to iodine requirement (17.7%). The potential iodine intake for Filipino adults is 42% if salt used by 7 of the 12 food products contained at least 30ppm iodine (**Table 32**).

Processed food products could be significant sources of iodine if all of the food processors utilize adequately iodized salt. However, salt analysis of salt sampled during the survey showed that only 54% of the 127 salt samples that were reportedly iodized have iodine concentrations between 30 to 70 ppm. Further, three food processors with major market share do not use adequately iodized salt while one food processor with major market reported not using iodized salt in food processing. The prevailing practice of using inadequate iodized salt or non-iodized salt and the accompanying general lack of external monitoring and limited internal quality control among food processors subjects the consumers to lost opportunities to meet their daily iodine intake. External quality monitoring of salt and other food ingredients is limited among registered food processors and non-existent among unregistered ones. It is therefore necessary to focus efforts in monitoring the quality of available salt used by the food processors. Reactivation of Bantay ASIN Task Forces is vital to this endeavor especially in areas where unregistered food processors are widespread. The documentation requirement of FDA for product registration should include certification that iodized salt was used during food processing (i.e. Certificate of Analysis). Although estimation showed that potential iodine contribution of most of the food products surveyed were less than 10% of the RENI for iodine, the exclusion of these food products in using iodized salt for processing food is not recommend. The exclusion might promote wrongful declaration of intended use of salt to avoid penalty or confiscation of product.



Table 31. Potential daily salt and iodine intake from selected processed food products using iCheck IODINE results

Food product	Mean ratio of total salt used /gm product	FNRI daily per capita intake, gm		Euromonitor daily per capita intake, gm		Mean iodine concentration of salt samples using iCheck, ppm	Potential iodine intake from food product, ug		% of adult RENI for iodine (150 ug/day)	
		Food product	Salt	Food product	Salt		FNRI	Euromonitor	FNRI	Euromonitor
Bread	0.04	11.00	0.40	13.42	0.48	30.47	12.07	14.72	8.0	9.8
Instant noodles	0.09	4.00	0.37	4.93	0.46	57.90	21.54	26.55	14.4	17.7
Soy sauce	0.13	3.00	0.39	3.01	0.39	11.26	4.43	4.44	3.0	3.0
Fish sauce	0.59	ND	ND	0.27	0.16	12.96	ND	2.08	ND	1.4
Canned fish	0.11	8.00	0.90	3.56 ^a	0.16	23.67	21.21	9.44	14.1	6.3
Hotdog	0.05	ND	ND	3.29 ^b	0.16	36.31	ND	5.85	ND	3.9
Canned corned beef	0.03	ND	ND	1.92 ^c	0.06	33.94	ND	2.02	ND	1.3
Total							59.24	65.09	39.5	43.4

ND = no data

^agrouped together with other canned/preserved seafood/fish

^bgrouped together with other chilled processed meat

^cgrouped together with other canned/preserved meat and meat products



Table 32. Potential daily salt and iodine intake from selected processed food products if salt used contained at least 30ppm iodine

Food product	Mean ratio of total salt used /gm product	FNRI daily per capita intake, gm		Euromonitor daily per capita intake, gm		Potential iodine intake from food product if salt has 30 ppm iodine, ug		% of adult RENI for iodine (150 ug/day)	
		Food product	Salt	Food product	Salt	FNRI	Euromonitor	FNRI	Euromonitor
Bread	0.04	11.00	0.40	13.42	0.48	11.88	14.49	7.9	9.7
Instant noodles	0.09	4.00	0.37	4.93	0.46	11.16	13.75	7.4	9.2
Soy sauce	0.13	3.00	0.39	3.01	0.39	11.79	11.83	7.9	7.9
Fish sauce	0.59	ND	ND	0.27	0.16	ND	4.80	ND	3.2
Canned fish	0.11	8.00	0.90	3.56 ^a	0.16	26.88	11.96	17.9	8.0
Hotdog	0.05	ND	ND	3.29 ^b	0.16	ND	4.84	ND	3.2
Canned corned beef	0.03	ND	ND	1.92 ^c	0.06	ND	1.79	ND	1.2
Total						59.24	65.09	41.1	42.3

ND = no data

^agrouped together with other canned/preserved seafood/fish

^bgrouped together with other chilled processed meat

^cgrouped together with other canned/preserved meat and meat products



Challenges and Lessons Learned

The study was met with several challenges. The lack of or the non-updated registry of food processors mostly of food products with no market share data did not allow preparation of the sampling frame prior to the field survey. Project Staff were deployed in the areas without any specific target respondents. Information was only gathered during actual LGU visits and through referrals of local residents. Further, the lack of registry contributed to the Project Team not being able to estimate the number of food processors that can be targeted in an area. This might have caused non-inclusion of respondents due to unawareness of the Project Team of their existence.

The occurrence of typhoon (Haiyan) and civil war (Zamboanga City) also affected the field surveys. Field surveys were delayed due to safety and security concerns. Communications with the LGUs were difficult. The Project Staff were sent to some areas without knowledge of the local situation. It was also difficult to coordinate with the local authorities due to the demands of their works while attending to emergency situations. Some targeted food processors were displaced and could not be located.

The survey among food processors of major brands was hindered by the nature of large organizations: requests must be approved by Supervisors, Management or by other departments. Approvals, if given, took several months even with continuous follow-up. Further, some food processors had different food plants, operating independently from one another. Accommodation in one food plant did not mean that the Project Staff would be accommodated in the other food plant even if both belonged to the same food company.

Conducting courtesy calls in local LGUs, up to the barangay level, is always important when doing surveys. More often, LGU Officers would accompany the Project Staff during the survey paving the way for respondents to accommodate the survey. However, in some areas, the presence of authorities had resulted to antagonism and refusals. This is probably because of the proliferation of



unregistered food processors operating in the area. There is also a possibility of false or inaccurate answers in some questions because of the need to provide the right answers to satisfy the authority.

In this survey, targeting the public markets in searching for food processors producing food products with no market share data was a necessity. Locals would usually know who and where food producers are in their area.

Refusals of respondents affected the quality of the results in both surveys. The non-participation of some food processors of major brands of food products and the provision of incomplete data of respondents contributed to the incomplete approximation of salt utilization of this industry.



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Appendix



Appendix 1. Areas targeted for the survey of food processors

Table 1. Areas targeted for the survey of food products with no market share data

Food Product	Luzon	Visayas	Mindanao
Bagoong isda or ginamos	NCR	Cebu	
	Bataan	Iloilo	
	Batangas		
	Laguna		
	La Union		
	Pangasinan		
	Quezon		
Shrimp paste or alamang	NCR	Capiz	Misamis Oriental
	Bataan	Iloilo	
	Bulacan		
	Pangasinan		
	Pampanga		
	Laguna		
	Quezon		
Pork longganisa	NCR	Cebu	Misamis Oriental
	Batangas		
	Bulacan		
	Ilocos Sur		
	Pampanga		
	Quezon		
Tamban tuyoy	Bataan	Cebu	
	Bulacan		
	Cavite		
	Capiz		
	Cavite		
	Pangasinan		
	Quezon		

Table 2. Areas targeted for the survey of artisanal bakeries and minor food brands

Food Product	Luzon	Visayas	Mindanao
Hotdog	NCR	Cebu	Misamis Oriental
	Batangas		
	Bulacan		
	Pampanga		
Fish sauce	NCR		
	Batangas		
	Bulacan		
	Pangasinan		
Artisanal bakeries	NCR	Cebu	Misamis Oriental
	Bulacan		
	Batangas		
	Pampanga		



Appendix 2. Summary of contacted offices and status of requested list

Offices	Status, N		Total
	No reply	Received list	
Government agencies	48	54	102
LGUs	15	11	26
Total	63	65	128



Appendix 3. Food Processor Survey Tool

A. Survey of Food Processors Utilizing Salt

COMPANY CODE: F P _____

Please accomplish the table below.

Assignment	Name / Signature	Date	Start Time	End Time
Data Collector				
Field Editor				
Checker				
Encoder				

A1 COMPANY PROFILE

A1.1 COMPANY NAME: _____

A1.2 COMPANY OWNER: _____

A1.3 COMPLETE ADDRESS: _____

A1.4 TELEPHONE NUMBERS: _____

A1.5 YEARS IN OPERATION: _____ A1.6 NUMBER OF EMPLOYEES: _____

A1.7 REGISTERED BUSINESS: _____ A1.8 BUSINESS REGISTRATION NO: _____

A1.9 REGISTRATION EXPIRATION DATE (MM/DD/YYYY): ____/____/____

A1.10 LTO REGISTERED: _____ A1.11 LTO REGISTRATION NO: _____

A1.12 LTO EXPIRATION DATE (MM/DD/YYYY): ____/____/____

A1.7 and A1.10 Business / LTO registration:
 1 – NO 2 – YES, document shown 3 – YES, document not shown 99 – NOT KNOWN

A2 RESPONDENTS PROFILE

A2.1 NAME : _____ **A2.1.1 POSITION :** _____

BLOCK: _____

CONTACT DETAILS : **A2.1.2 TELEPHONE NO :** _____ , _____

A2.1.3 CELLPHONE NO : _____ , _____

A2.1.4 EMAIL ADDRESS: _____ , _____

A2.2 NAME : _____ **A2.2.1 POSITION :** _____

BLOCK: _____

CONTACT DETAILS : **A2.2.2 TELEPHONE NO :** _____ , _____

A2.2.3 CELLPHONE NO : _____ , _____

A2.2.4 EMAIL ADDRESS: _____ , _____

A2.3 NAME : _____ **A2.3.1 POSITION :** _____

BLOCK: _____

CONTACT DETAILS : **A2.3.2 TELEPHONE NO :** _____ , _____

A2.3.3 CELLPHONE NO : _____ , _____

A2.3.4 EMAIL ADDRESS: _____ , _____

FOOD PROCESSORS SURVEY TOOL | Page 1 of 7



A. Survey of Food Processors Utilizing Salt

A3 FOOD PRODUCT

Specify the food product produced by the company. Encircle the code of the food product and specify the brand name, approximate annual volume (in MT), local market share (in %), and consumer class. If the food product is not being produced write **NA** for Not Applicable under all appropriate columns. Write the code/s for the areas of distribution enumerated by the respondent/s. If information is not known or not available write **NK**.

Use the code on the left side of the food products for reference to the succeeding tables that may require identification of the food product.

Code	Food Product	(A) Brand Name	Approximate Annual Volume, MT			(E) Local Market Share, %	(F) Consumer Class
			Local		(D) Exported		
			(B) Amount	(C) Areas of Distribution			
A3.1	Soy Sauce						
A3.2	Crackers						
A3.3	Instant Noodles						
A3.4	Canned Fish/ Sardines						
A3.5	Hotdog						
A3.6	Tamban Tuyo						
A3.7	Bagoong Isda/ Ginamos						
A3.8	Canned Corned Beef						
A3.9	Fish Sauce/ Patis						
A3.10	Pork Longganisa						
A3.11	Shrimp Paste/ Alamang						
A3.12	Bread (Include Pandesal)						
A3.13	Others 1						
A3.14	Others 2						

(C) Local areas of distribution:

- | | | |
|----------------------------------|--------------------------|--------------------|
| 1 - National (whole Philippines) | 5 - Mindanao only | 9 - others, _____ |
| 2 - NCR only | 6 - Luzon and Visayas | 10 - others, _____ |
| 3 - Luzon only | 7 - Visayas and Mindanao | |
| 4 - Visayas only | 8 - Luzon and Mindanao | |

(F) Consumer Class [source: NSCB, FIES classification]

- A and B - annual income of PhP1,857,000.00 or higher
- C - annual income of PhP603,000 to less than PhP1,857,000.00
- D - annual income of PhP191,000 to less than PhP603,000.00
- E - annual income of PhP62,000.00 or less



A. Survey of Food Processors Utilizing Salt

B. AWARENESS ON IODIZED SALT

B1. Is the company aware of iodized salt? _____ 1 – No 2 – Yes (if answer is 1, go to C)

B1.1 If yes, what benefits of using iodized salt do you know? _____

B2. Do you know the standard level of iodine in iodized salt? _____ 1 – No 2 – Yes (If answer is NO, go to C)

B2.1 If answer is YES, what is the standard level of iodine in iodized salt? _____

B2.2 From where did you learn about the standard level? _____

C. SALT PROFILE

C1 FOOD PRODUCT

FOOD PRODUCT 1: _____

C1.1a For each type of salt, specify the source/supplier, brand of salt purchased, required iodine level (in ppm), reason for the level of iodine and the method used to check the iodine level of the salt bought. If the type of salt is not used write **NA** for Not Applicable under all appropriate columns. If information is not known or not available write **NK**.

(A) Type of Salt	(B) Brand of Purchased Salt	(C) Source/ Supplier	(D) Required Iodine Level, ppm	(E) Reason for Iodine Level	(F) Quality Check used
1 - Local Solar Salt					
2 - Imported Solar Salt					
3 - Cooked Salt					
4 - Pure Vacuum Dried Salt					
5 - Others, _____					

(F) Quality check used to measure iodine content of iodized salt bought:
 0 – NA, Salt is not iodized 2 – Certificate of Analysis from the supplier 4 – Test Kit, in-house 6 – Others: _____
 1 – No quality check used 3 – Certificate of Analysis from a 3rd part 5 – Titration Method, in-house 99 – NOT KNOWN

C1.2a Characterize each type of salt used as ingredient under purity, moisture, required iodine level (in ppm) and amount of salt (in MT) used last year (January to December 2012) for the specified food product. If the type of salt is not used write **NA** for Not Applicable under all appropriate columns. If information is not known or not available write **NK**.

(A) Type of Salt	(B) Purity	(C) Moisture	(D) Required Iodine Level, ppm	Total Amount of Salt Used as Ingredient, MT	
				(E) Iodized	(F) Non-iodized
1 - Local Solar Salt					
2 - Imported Solar Salt					
3 - Cooked Salt					
4 - Pure Vacuum Dried					
5 - Others, _____					

Get copies or record results of Certificate of Analysis / Results of in-house testing whichever is applicable, when possible.



A. Survey of Food Processors Utilizing Salt

FOOD PRODUCT 2: _____

C1.1b For each type of salt, specify the source/supplier, brand of salt purchased, required iodine level (in ppm), reason for the level of iodine and the method used to check the iodine level of the salt bought. If the type of salt is not used write **NA** for Not Applicable under all appropriate columns. If information is not known or not available write **NK**.

(A) Type of Salt	(B) Brand of Purchased Salt	(C) Source/ Supplier	(D) Required Iodine Level, ppm	(E) Reason for Iodine Level	(F) Quality Check used
1 - Local Solar Salt					
2 - Imported Solar Salt					
3 - Cooked Salt					
4 - Pure Vacuum Dried Salt					
5 - Others, _____					

(F) Quality check used to measure iodine content of iodized salt bought:

- 0 – NA, Salt is not iodized 2 – Certificate of Analysis from the supplier 4 – Test Kit, in-house 6 – Others: _____
 1 – No quality check used 3 – Certificate of Analysis from a 3rd part 5 – Titration Method, in-house 99 – NOT KNOWN

C1.2b Characterize each type of salt used as ingredient under purity, moisture, required iodine level (in ppm) and amount of salt (in MT) used last year (January to December 2012) for the specified food product. If the type of salt is not used write **NA** for Not Applicable under all appropriate columns. If information is not known or not available write **NK**.

(A) Type of Salt	(B) Purity	(C) Moisture	(D) Required Iodine Level, ppm	Total amount of Salt Used as Ingredient, MT	
				(E) Iodized	(F) Non-iodized
1 - Local Solar Salt					
2 - Imported Solar Salt					
3 - Cooked Salt					
4 - Pure Vacuum Dried					
5 - Others, _____					

Get copies or record results of Certificate of Analysis / Results of in-house testing whichever is applicable, when possible.



A. Survey of Food Processors Utilizing Salt

FOOD PRODUCT 3: _____

C1.1c For each type of salt, specify the source/supplier, brand of salt purchased, required iodine level (in ppm), reason for the level of iodine and the method used to check the iodine level of the salt bought. If the type of salt is not used write **NA** for Not Applicable under all appropriate columns. If information is not known or not available write **NK**.

(A) Type of Salt	(B) Brand of Purchased Salt	(C) Source/ Supplier	(D) Required Iodine Level, ppm	(E) Reason for Iodine Level	(F) Quality Check used
1 - Local Solar Salt					
2 - Imported Solar Salt					
3 - Cooked Salt					
4 - Pure Vacuum Dried Salt					
5 - Others, _____					

(F) Quality check used to measure iodine content of iodized salt bought:

0 – NA, Salt is not iodized 2 – Certificate of Analysis from the supplier 4 – Test Kit, in-house 6 – Others: _____
 1 – No quality check used 3 – Certificate of Analysis from a 3rd part 5 – Titration Method, in-house 99 - NOT KNOWN

C1.2c Characterize each type of salt used as ingredient under purity, moisture, required iodine level (in ppm) and amount of salt (in MT) used last year (January to December 2012) for the specified food product. If the type of salt is not used write **NA** for Not Applicable under all appropriate columns. If information is not known or not available write **NK**.

(A) Type of Salt	(B) Purity	(C) Moisture	(D) Required Iodine Level, ppm	Total Amount of Salt Used as Ingredient, MT	
				(E) Iodized	(F) Non-iodized
1 - Local Solar Salt					
2 - Imported Solar Salt					
3 - Cooked Salt					
4 - Pure Vacuum Dried					
5 - Others, _____					

Get copies or record results of Certificate of Analysis / Results of in-house testing whichever is applicable, when possible.



A. Survey of Food Processors Utilizing Salt

C2 IODIZED SALT CHECKING AND USE

C2.1 If the iodized salt purchased did not comply with the required iodine level at the point of purchase or delivery, what are the actions of your company/ food processor?

C2.2 If there is no method of quality check available to check iodine level in salt, what are the alternative actions taken by your company / the food processor?

C2.3 What are the reasons for the use (or non-use) of iodized salt in your food product/s?

C2.4 What is the view of your company in the use (or non-use) of iodized salt during processing of (identify the food product/s)?

C3 FOOD PRODUCT LABELLING

C3.1 Does your food label declare the use of iodized salt in processing (identify the food product/s) ?

_____ 1 – No 2 – Yes (if answer is 2, go to C3.2)

C3.1.1 If answer is NO, state the reason why using iodized salt as ingredient was not declared

C3.2 Do you fortify your food with iodine, aside from the iodine from iodized salt?

_____ 1 – No 2 – Yes (if answer is 1, go to D)

C3.2.1 If YES, does the food label indicate the additional iodine in the food product?

_____ 1 – No 2 – Yes (if answer is 2, go to C3.2.2)

C3.2.1.1 If NO, why? _____

C3.2.2 If YES, does the front of pack label carries the Sangkap Pinoy Seal or other seal?

_____ 1 – No 2 – Yes

C3.2.2.1 If NO, why? _____

Get sample or picture of Label / Packaging material of the specified food product, when possible.

D. KNOWLEDGE ON THE PHILIPPINE SALT IODIZATION PROGRAM

D1. Is the company aware of the National Salt Iodization Program (NSIP)? _____ 1 – No 2 – Yes

D2. Is the company aware of the ASIN Law or Republic Act 8172? (if answer is 1, go to D6) _____ 1 – No 2 – Yes

D2.1 If yes, what do you know of the ASIN Law or Republic Act 8172?

D3. What are your views of the NSIP and the ASIN Law?

D4. What do you think should be improved in the NSIP and the ASIN Law?

D5. What support does your company/ food processor need with regards to the NSIP and ASIN Law?

D6. What system can you recommend to ensure that the salt source from salt suppliers is adequately iodized?



A. Survey of Food Processors Utilizing Salt

E. SAMPLE COLLECTION

E1. Salt sample/s available? _____ 1 – No 2 – Yes
If YES, indicate the following:
COLLECTION DATE: _____

SALT SAMPLE 1 CODE: F P _____
SALT SAMPLE 2 CODE: F P _____
SALT SAMPLE 3 CODE: F P _____

If NO, state the reason for the failure to get salt sample/s

E2. Copy / Copies if Certificate of Analysis or results of quality checks obtained or seen and details recorded?
_____ 1 – No 2 – Yes
If NO, state the reason for the failure to get copies of Certificate of Analysis / results of in-house testing

E3. Sample of packaging material/s available? _____ 1 – No 2 – Yes
If YES, indicate the following:
SAMPLE OF PACKAGING MATERIAL/S: _____ 1 – No 2 – Yes
PICTURE OF PACKAGING MATERIAL/S: _____ 1 – No 2 – Yes
If NO, state the reason for the failure to get sample/s or picture of packaging materials

- - END - -



Appendix 4. Food processor company profile

Table 1. Number of food processors by brand share and reported number of years in operation

Market share	Number of Years in Operation, yr					Total respondents
	<=1	1 to <=5	>5 to <=25	>25 to <=50	>50	
No data	24	107	278	103	16	528
Minor	4	8	17	9	1	39
Major	0	1	3	4	3	11
Total	28	116	298	116	20	578

Table 2. Number of food processors by brand share and reported number of employees

Market share	Number of Employees					Total respondents
	No data	1 to 9	10 to 99	100 to 199	200 or more	
No data	0	391	127	4	6	528
Minor	0	9	18	3	9	39
Major	1	0	1	1	8	11
Total	1	401	146	26	23	578



Appendix 5. Salt types used by surveyed food products by reported source / supplier of salt

Table 1. Number of type of salt used by major brands of food products surveyed by reported source/supplier of salt

Salt type	Source/Supplier, N						Total
	Outside country	Arvin	Salinas	Artemis	Other processors	Not known	
Local solar	0	1	0	0	0	0	1
Imported solar	1	4	0	3	0	0	8
Vacuum dried	1	2	1	2	1	0	7
Coarse, unknown	0	0	0	0	0	1	1
Total	2	7	1	5	1	1	17

Table 2. Number of type of salt used by minor brands of food products surveyed by reported source/supplier of salt

Salt type	Source/Supplier, N									Total
	Local market	Within area	Outside area	Outside country	Arvin	Salinas	Artemis	Other processors	Not known	
Local solar	0	18	3	0	0	0	0	0	3	24
Imported	0	2	0	1	10	1	3	2	1	20
Cooked	0	7	0	0	0	0	1	0	1	9
Vacuum dried	3	1	3	2	11	5	0	8	6	39
Coarse, unknown	0	0	0	0	0	0	0	0	1	1
Refined, unknown	0	0	0	0	0	0	0	0	0	0
Total	3	28	6	3	21	6	4	10	12	93

Table 3. Number of type of salt used by surveyed food products with no market share data by reported source / supplier of salt

Type of salt	Source/Supplier, N									Total
	Local market	Within area	Outside area	Outside country	Arvin	Salinas	Artemis	Other processors	Not known	
Local solar	96	99	116	0	0	0	0	4	19	334
Imported	31	11	4	0	0	1	2	2	4	55
Cooked	3	14	1	0	0	1	1	2	3	25
Vacuum dried	37	28	7	6	7	0	0	31	7	123
Coarse, unknown	19	1	3	0	0	0	0	1	3	27
Refined, unknown	27	0	1	0	0	0	0	0	2	30
Total	213	153	132	6	7	2	3	40	38	594



Appendix 6. Potential daily salt and iodine intake from selected processed food products if salt used contained at least 50ppm iodine

Food product	Mean ratio of total salt used /gm product	FNRI daily per capita intake, gm		Euromonitor daily per capita intake, gm		Potential iodine intake from food product if salt has 30 ppm iodine, ug		% of adult RENI for iodine (150 ug/day)	
		Food product	Salt	Food product	Salt	FNRI	Euromonitor	FNRI	Euromonitor
Bread	0.04	11.00	0.40	13.42	0.48	11.88	14.49	7.9	9.7
Instant noodles	0.09	4.00	0.37	4.93	0.46	11.16	13.75	7.4	9.2
Soy sauce	0.13	3.00	0.39	3.01	0.39	11.79	11.83	7.9	7.9
Fish sauce	0.59	ND	ND	0.27	0.16	ND	4.80	ND	3.2
Canned fish	0.11	8.00	0.90	3.56 ^a	0.16	26.88	11.96	17.9	8.0
Hotdog	0.05	ND	ND	3.29 ^b	0.16	ND	4.84	ND	3.2
Canned corned beef	0.03	ND	ND	1.92 ^c	0.06	ND	1.79	ND	1.2
Total						59.24	65.09	41.1	42.3



Appendix 7. Potential salt and iodine intake from selected processed food products based on results of iCheck IODINE of specific brand of food product

Food product	Mean ratio of total salt used /gm product	FNRI daily per capita intake, gm		Euromonitor daily per capita intake, gm		Iodine content of salt using iCheck, ppm	Local Market Share, %	Potential iodine intake from food product, ug		% of adult RENI for iodine (150 ug/day)	
		Food product	Salt	Food product	Salt			FNRI	Euromonitor	FNRI	Euromonitor
Bread	0.04	11.00	0.40	13.42	0.48	37.93	50.7	15.02	18.32	10.0	12.2
Instant noodles	0.09	4.00	0.37	4.93	0.46	57.90	66.5	21.54	26.55	14.4	17.7
Soy sauce	0.13	3.00	0.39	3.01	0.39	9.43	2.6	3.71	3.72	2.5	2.5
Fish sauce	0.59	ND	ND	0.27	0.16	17.62	23.5	-	2.82	-	1.9
Canned fish	0.11	8.00	0.90	3.56 ^a	0.16	12.01	19.0	10.76	4.79	7.2	3.2
Hotdog	0.05	ND	ND	3.29 ^b	0.16	36.31	23.3	-	5.85	-	3.9
Canned corned beef	0.03	ND	ND	1.92 ^c	0.06	33.94	ND	-	2.02	-	1.3
Total								51.03	64.07	34.0	42.7

ND = no data

^agrouped together with other canned/preserved seafood/fish

^bgrouped together with other chilled processed meat

^cgrouped together with other canned/preserved meat and meat products

