

## **Title of Project:**

**SITUATION ANALYSIS OF IMPORTED  
SALT AND RICE INTO PNG: NUMBER  
& QUANTITY OF IMPORTS AND  
EXTENT OF FORTIFICATION.**

Joint project: NDOH, SMHS UPNG,  
CUSTOMS, NAQIA etc....

# Presented to SMHS UPNG Ethics and Research grant committee

**Victor J. Temple**

**Coordinator Micronutrient Research Lab Division  
of Basic Medical Sciences, School of Medicine and  
Health Sciences, University of PNG**

## INTRODUCTION / BACKGROUND

- PNG has had legislations for mandatory salt iodisation since 1995 and also mandatory rice fortification since 2007;
- Rice must contain at least 0.5mg/100g of Thiamine (Vitamin B1), 6.0mg/100g of Niacin (Vitamin B3) and **3.0mg/100g of Iron**.
- Salt must be iodized with **Potassium Iodate**
  - Level in table salt should be **40-70ppm (mg/kg)**
  - Level in other salt should be **30-50ppm**

## Introduction cont....

- PNG NNS in 2005 found 92.5% of households were consuming salt containing about 15ppm of Iodine, which is below National Iodization standard of 30ppm
- A number of small-scale surveys conducted across several districts between 2012 and 2014 reported that although most households had access to salt the amount of iodine in the salt appeared inadequate;
- There is concern that pockets of iodine deficiency may exist in PNG either because some people are consuming non-iodised or inadequately iodised salt or they are not consume commercial salt.

## Introduction cont....

- A small study (150 school age children and 70 non-pregnant women) in Gulf Province in 2015 found the Median Urinary Iodine Concentration (MUIC) to be 32 $\mu$ g/L and 36 $\mu$ g/L respectively, while only 23% of households had commercial salt on day of survey;
- Analysis in 2015 of 12 different brands of rice purchased in shops in Port Moresby found that only 58% (7/12) of them were fortified, including 33% (4/12) that were fortified by dusting, which is inappropriate for populations where rice is rinsed before cooking, as it is commonly done in PNG;

## Introduction cont....

- Currently, about 90% of salt brands used in PNG are imported mainly through the seaports;
- Majority of the different brands of rice are imported primarily by two companies;
- In 2015 discussions with Environmental Health in NDOH indicate that imports of salt and rice are not routinely monitored to ensure compliance with national standards, including fortification standards;

## Introduction cont....

- Environmental Health Program reports limited resources and manpower and lack of an effective food control system.
- PNG Food Safety Policy refers to “lack of policy and operational coordination at national level” and notes that “details of food safety functions have not been determined or clearly determined in the food sanitation legislation.”

## Introduction cont.....

- Verifiable data on rice and salt imports into PNG is unavailable;
  - it is not known how much rice & salt is imported,
  - from which countries,
  - what brands and
  - how many shipments;
- Data collected by recent salt iodisation surveys recorded that the number of salt brands available in retail stores has increased, suggesting an increased number of shipments from a variety of countries;



## Introduction cont.....

- It appears that, despite the existing legislation and the efforts, on the part of some companies, to follow regulations and import fortified foods, significant amounts of rice and salt currently available in PNG may not be fortified according to national standards.
- Therefore, the benefit of food fortification in PNG may not be fully realized.

## The Need for Import Monitoring and for Compliance with Fortification Standards

- To ensure effective and sustainable food fortification programme, it is important for government to ensure importation of only salt and rice that meet national standards,
- Because salt and rice are not commercially produced in PNG, monitoring of imports is essential,
- Import monitoring should focus on reviewing documentation and declarations on food labels,
- Certificate of Conformity or Analysis (COA), and on
- Systematic random collection of samples for qualitative or quantitative testing to verify fortification,

## Need for import monitoring..... cont .....

- Imports into PNG are monitored and controlled by Customs, NAQIA and Environmental Health,
- All importers and exporters submit data electronically into the ASYCUDA (Automated SYstem for CUstoms DAta);
- Customs can flag items for Environmental Health's inspection in ASYCUDA, thereafter documentation is usually printed out and manually passed on to Environmental Health Officers (EHOs);

## Need for import monitoring..... cont .....

- Within the Food Control system, EHOs are positioned at declared ports of entry,
- They review some document of imported foods (Health Certificate, Sanitary Certificate, Certificate of Analysis etc.);
- They currently do not appear to be monitoring for compliance with fortification standards; e.g.,
  - they do not review either Certificate of Analysis of Salt consignments for Iodine levels, nor those of Rice for nutrient levels;

## Need for import monitoring..... cont .....

- This situation analysis project will provide important information to advocate for a more effective import monitoring system for fortified foods and for designing a feasible but effective import monitoring system;
- For EHOs to grant import permits, it is necessary for PNG authorities to conduct inspections of the fortification process during production at facilities abroad;
- These inspections should be funded by the importing company;
- In addition, effective monitoring of fortification standards requires that qualitative/quantitative assessment of imported foods is carried out at regular intervals at the seaports in PNG;

## Major Objectives of the project

- Major objectives are:
- **To obtain data on imports of rice and salt into PNG, and**
- **To assess the extent of compliance with national fortification standards;**
- In order to fulfil these objectives the Situation Analysis aims to document:
- **The number of rice and salt importers in the country,**
- **The number and frequency of shipments,**
- **The number of brands of rice and salt, and**
- **The amount of each brand imported into the country over a 6 - 12-months period.**

## METHODOLOGY / EXPERIMENTAL APPROACH

- **Planning and preparation:**
- The present proposal will be presented to NDOH (Food Fortification Committee), for input and endorsement,
- Finalise proposal and questionnaire with NDOH and Customs department,
- Agree on data collection methodology and duration of data collection,
- Obtain approval from Research and Ethics committee in SMHS, UPNG;
- Obtain approval from MRAC NDOH,
- Pre-test the questionnaire and train relevant laboratory personnels on rice and salt testing methodologies,

## Methodology cont....

- **Study type and sites:**
- **Type:** Prospective cross-sectional study of all rice and salt shipments into PNG during data collection period
- **Sites:** The seaports, which are the major official points of entry of rice and salt into the country; however discussion should be held with Customs to determine how many sites are necessary for data collection,
  - **the objective is to collect data from all ports that process at least 80% of rice and salt shipments they receive;**



## Methodology cont....

- **Data collection:** information to be collected
- Register/inventory of all rice & salt importers in PNG,
- Number and location (which ports) of shipments;
- Register/inventory of all rice & salt brands imported,
- Amount of each rice & salt brand imported;
- Determine how much of total rice and salt imported into PNG during the data collection period (6 months) has been fortified;
  - Brands of rice fortified with Iron (kernel / dusting)
  - Brands of salt fortified to National Standard,

## Methodology cont.....

- **Data collection to be facilitated by Customs and Environmental Health (NDOH);**
- Data can be collected in one of two ways:
  - By Customs and EHO directly (preferred method)
  - By UPNG students with authorisation of Customs and support of Environmental Health NDOH;
- Data will be collected, using a modified pretested questionnaire, developed by the study coordinator in consultation with NDOH and Customs (first draft of questionnaire is attached);

## Methodology cont.....

- Data collection will be from 1<sup>st</sup> July 2016 to 31 December 2016;
- If Customs records suggest that this period is not representative of average annual rice and salt imports, the data collection period will be extended to the end of June 2017;

## Methodology cont.....

- **Collection and testing of Samples:**
- Data collectors will collect a sample of each brand of rice and salt from each shipment,
- Each sample will be labelled and linked with the relevant code number of the questionnaire,
- **Samples will be sent to the Lab in SMHS UPNG,**
- Rice sample will be tested qualitatively to ascertain if it is fortified with iron (by kernels or dusting);
- Salt sample will be tested quantitatively by WYD salt checker to ascertain if it is iodised according to national standards;

## **SIGNIFICANCE / JUSTIFICATION OF THE PROJECT**

- Justification for this project is based on the apparent lack of verifiable data on imports of rice and salt into the country and extent of compliance with national fortification standards;
- On completion, the project will provide accurate estimate of proportion of rice and salt imported into the country that is fortified according to the national standards;
- Results obtained will be used to advocate for effective import monitoring of fortified foods and to facilitate the development of cost-effective import monitoring system within the current import monitoring and food control systems;

## Significance /Justification cont.....

- This project is in line with the nutrition policy in PNG National Health Plan (2011 – 2020) and Vision 2050:
- Consumption of adequate and safe nutritious meals is the best form of preventive medicine and a guarantee of good health for the community;
- It is needed to improve the health and lives of all Papua New Guineans, and to become a “Smart, Wise, Fair, Healthy and Happy Society”.

## **Outcome of the project: Contribute to development of effective and feasible system for monitoring imports of fortified foods in PNG:**

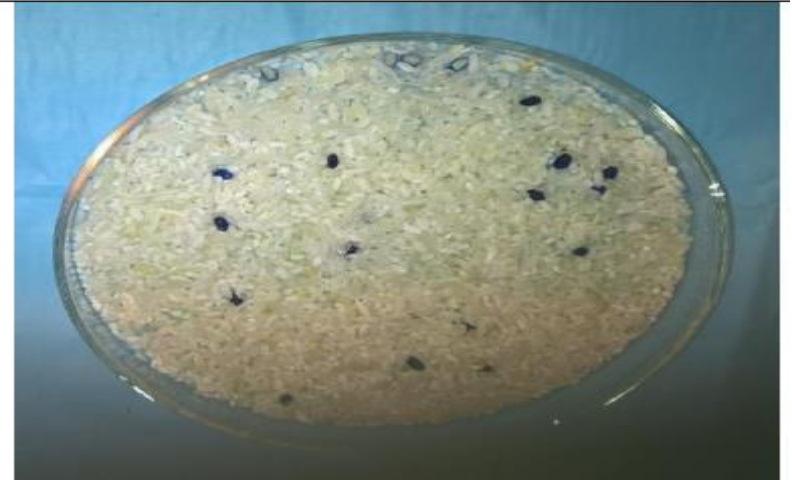
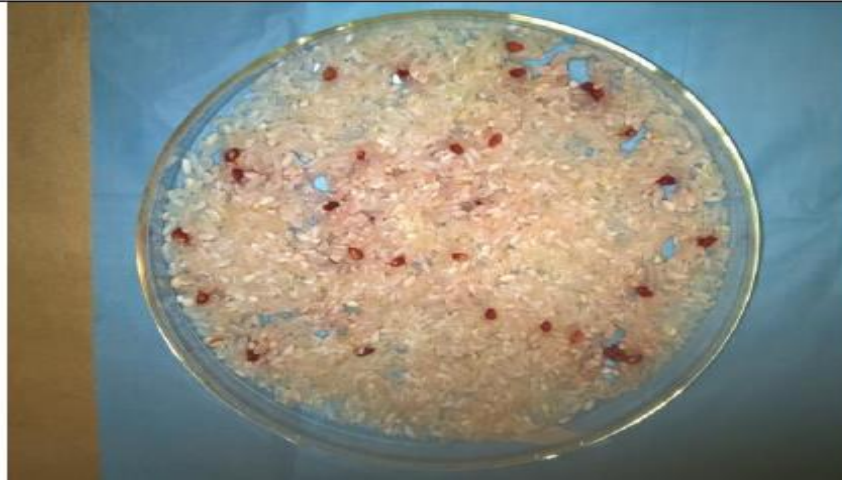
- The results will be used to advocate for improved import monitoring system for fortified foods in PNG,
- It will contribute to discussions to develop a feasible but effective monitoring system, for example:
  - What documents to review,
  - Protocol for sample collection
  - Protocol for testing,
  - Criteria for approval of import shipments, etc..

## OUTCOME cont.....

- Train EHO and Customs Offices on how to undertaken
  - quantitative testing for iodine in salt,
  - qualitative testing for Iron in rice;
- Provide on-going quality assurance support for routine testing at ports,
- Supply necessary re-agents based on budget from NDOH and/or Customs, for routine testing of salt and rice;



## Results of qualitative testing of rice for presence of Iron



### Two rice brands fortified with Iron by Kernel technology



Rice fortified with Iron by Dusting technology

## Results of qualitative testing of rice for presence or absent of Iron



**Rice fortified with Iron by Kernel technology**

**Rice with zero Iron fortification (Unfortified rice)**

# Effect of washing rice fortified with Iron by dusting technology



Fig. 41: Water from unfortified rice washed once



Fig. 42: Water obtained from Fig 33 was sprayed with Reagent 3.

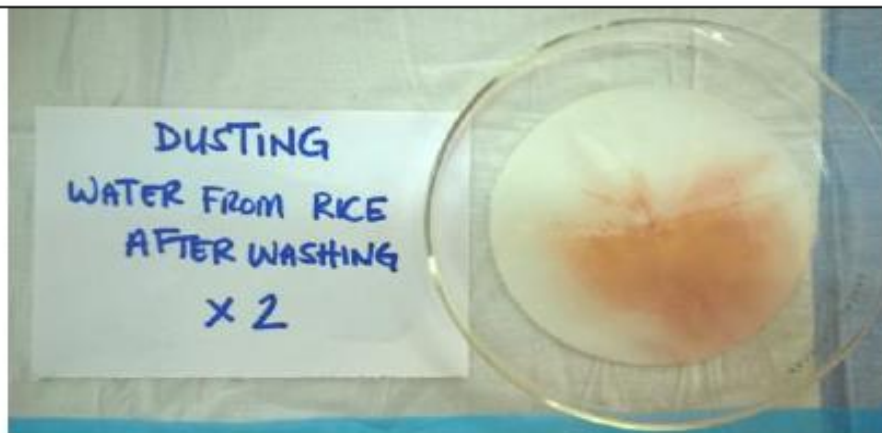


Fig. 43: Water obtained from Fig. 35 was sprayed with Reagent 3



Fig. 44: Water obtained from Fig 37 was sprayed with Reagent 3.