

# **STATUS OF SALT IODIZATION IN THE NCD & OTHER CITIES IN PNG: 20 YRS AFTER PNG SALT LEGISLATION**

VJ Temple, D Roffunduo, SJ Lomutopa, C Aquame,  
S Malai, M. Mu-Uh, M Kaven, N Pokale & W Nigani  
Micronutrient Research Lab, Iodine Research Unit  
Division of Basic Medical Sciences,  
School of Medicine and Health Sciences, UPNG

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**RUNNING TITLE: IODINE DEFICIENCY IN PNG**

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## INTRODUCTION

- Real and effective development in a society can occur if sustainable development is aimed at supporting the “**whole child**” [UNICEF 2013] :
- By promoting and safeguarding the child’s emotional, social, physical, cognitive development and basic livelihood needs,
- According to the Lancet group, Adequate nutrition is “**a quintessential sustainable development goal**” [Lancet 2013]

## Introduction cont...

- Micronutrient deficiency “**Hidden Hunger**” is a major obstacle to sustainable development in a community;
- Impact of **Hidden Hunger** is multifaceted:
- It increases the risk factors for disease burden, economic and social deprivation, because of its long ranging negative effects on the health of affected individuals and the community as a whole [UNICEF/WHO 2012];
- **Iodine deficiency** is an example of **Hidden Hunger**,

## Introduction cont...

- Iodine is required for biosynthesis of Thyroid Hormones: Thyroxine (T4), Triiodothyronine (T3);
- Low dietary intake and utilization of iodine can cause the spectrum of diseases, called **“Iodine Deficiency Disorders (IDD)”**;
- **Iodine deficiency (ID) is the world’s greatest single cause of preventable mental retardation** [WHO/ICCIDD/UNICEF 2007, 2010]

## Introduction cont...

- Mild to moderate ID in “apparently” healthy children can cause:
- **Stunted growth,**
- **Impaired learning ability,**
- **Underperformance in school,**
- **Poor performance in psychometric tests,**
- **Impaired physical and cognitive function,**
- **Reduced capacity for critical thinking,**

[WHO/UNICEF/ICCIDD 2007]

## Introduction cont...

- In adults, **low intake of iodine** can cause:
- **Hypothyroidism**, which may be characterized by:
  - Low work capacity,
  - Reduced productivity,
  - Dry scaly skin,
  - Tingling and numbness in extremities,
  - Forgetfulness,
  - Personality changes,
  - Depression,
  - Anemia,
  - High blood cholesterol, etc [WHO, ICCIDD 2010]

## Introduction cont...

- Universal Salt Iodization (USI) is the most effective and sustainable intervention strategy for prevention, control, and elimination of ID in a population [WHO/UNICEF/ICCIDD 2007];
- USI strategy was implemented in PNG in June 1995 with the enactment of PNG Salt Legislation, which banned importation, production and sale of non-iodised salt. [P. Barter, 1995, Gazette G 47]
- PNG Food Sanitation Regulation (PNFSR) states that iodine content in all salt used in PNG should not be less than 30.0ppm [NDOH 2007];



# JUSTIFICATION

- One of the nutritional objectives in the current PNG National Health Plan (2011 – 2030) is to eliminate IDD and to monitor the availability and utilization of iodized salt at district and provincial levels [NDOH 2010];
- **This is important to improve the health and life of all Papua New Guineans so as to be a “Smart, Wise, Fair, Healthy and Happy Society”** [Vision 2050]

## **Major Aim of this project:**

- The major aim of our project was to monitor iodine content in various brands of salt sold in NCD and other cities in PNG;

## MATERIALS & METHODS

- **Study Sites:**
  - Retail stores in NCD, Lufa district (EHP), Wewak (ESP), Manus and Lae,
- **Assay Method:**
  - WYD Iodine Checker for Assay of Iodine content in salt samples; [WYD CHECKER, 2005]
  - Internal QC Monitoring was by “Westgard” Rules using Levy-Jennings Charts;
- **Samples:** Some brands of salt used in PNG

Some brands of salt in retail shops in various cities in PNG



# RESULTS

# CRITERIA FOR INTERPRETATION OF RESULTS

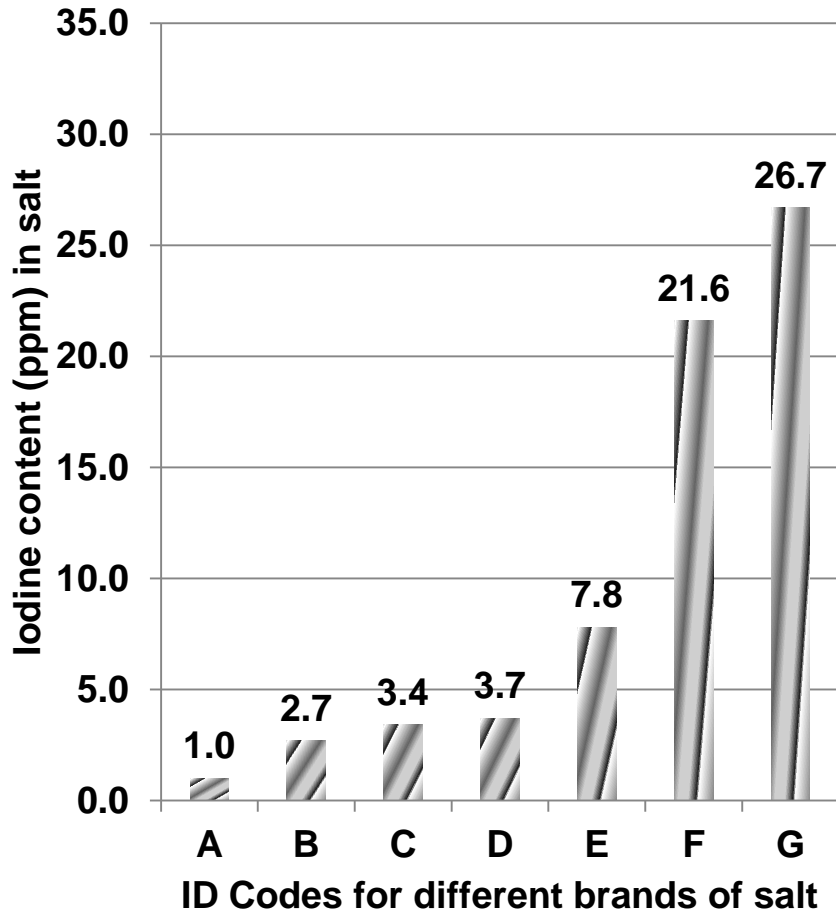
- **MAJOR CRITERIA USED:**
- **PNG Food Sanitation Regulations (PNG Salt Legislation):**
- **Iodine content of salt should not be less than 30ppm** (NDOH, 1995, 2007)
  - (That is: 30mg iodine per kilogram of salt)
- Use of Potassium Iodate is mandatory for iodization of all salt in PNG
  - NB: ppm = mg/kg

## **CRITERIA Cont.....**

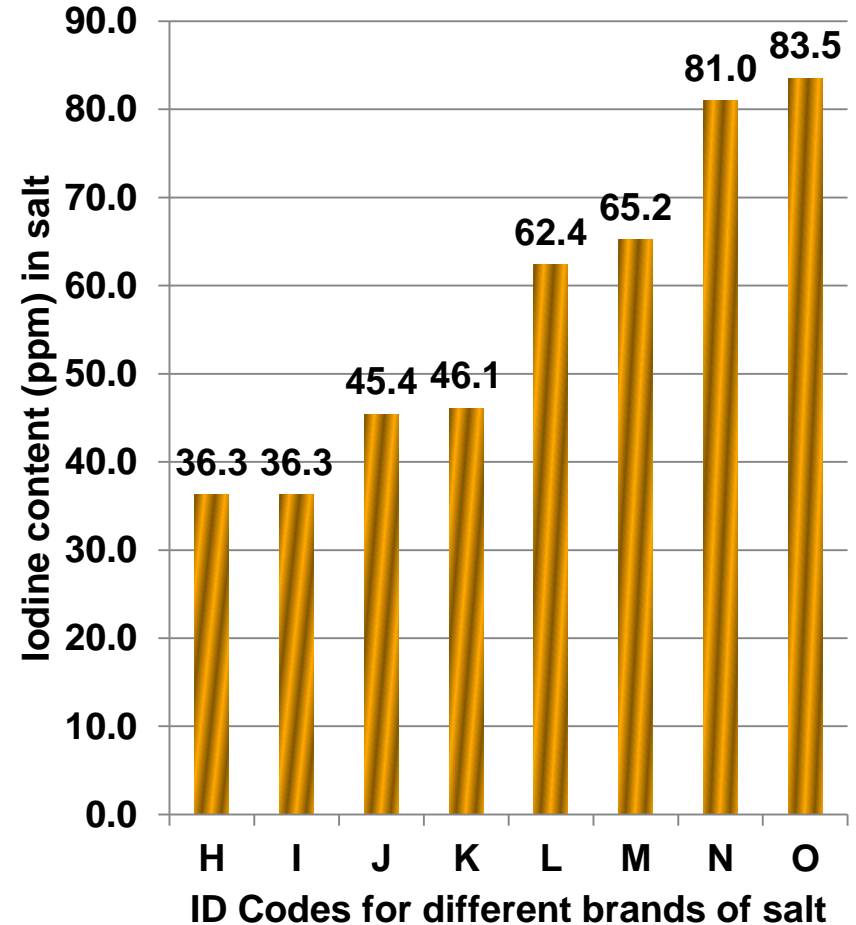
- **Less than 30ppm in a brand:**
- **Indicates failure in implementation of PNG Food Sanitation Regulation (PNG Salt Legislation);**
- **NB:**
  - **In order to avoid any legal complications salt brand names are not used in our presentation**
  - **ID codes are used to indicate the brands**

# Iodine content (ppm) in different brands of salt sold in NCD: 15 Brands of salt in 2009

Total of 7 (46.7%) brands with iodine content <30.0ppm



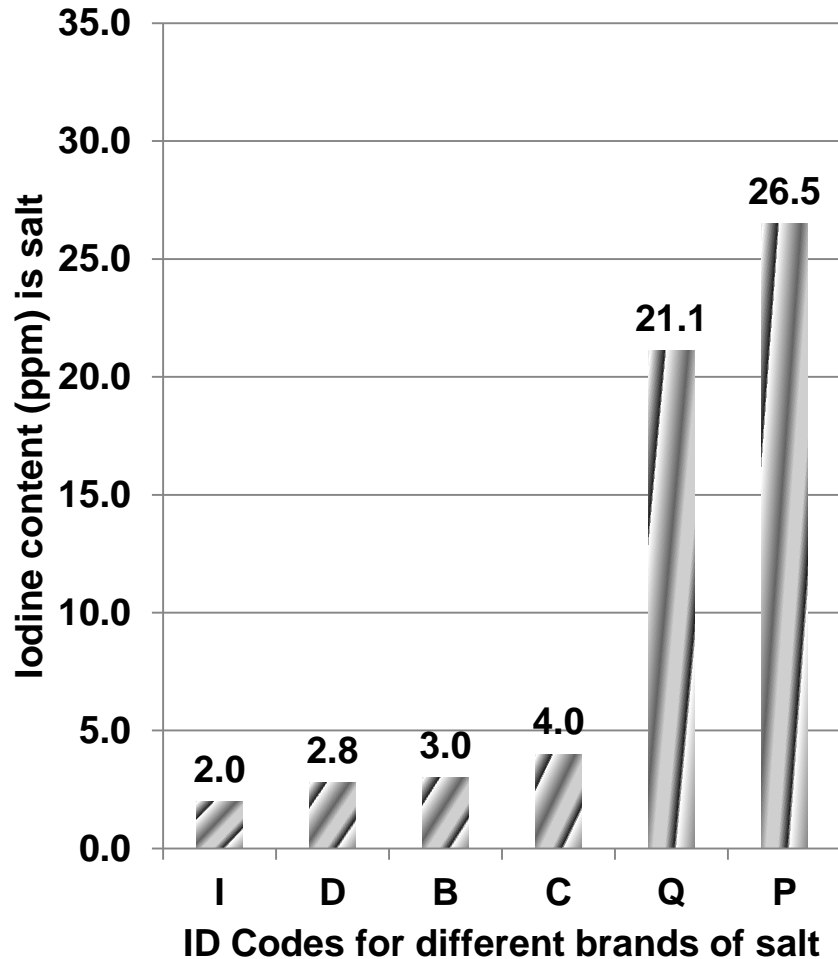
Total of 8 (53.3%) brands with iodine content  $\geq$ 30.0ppm



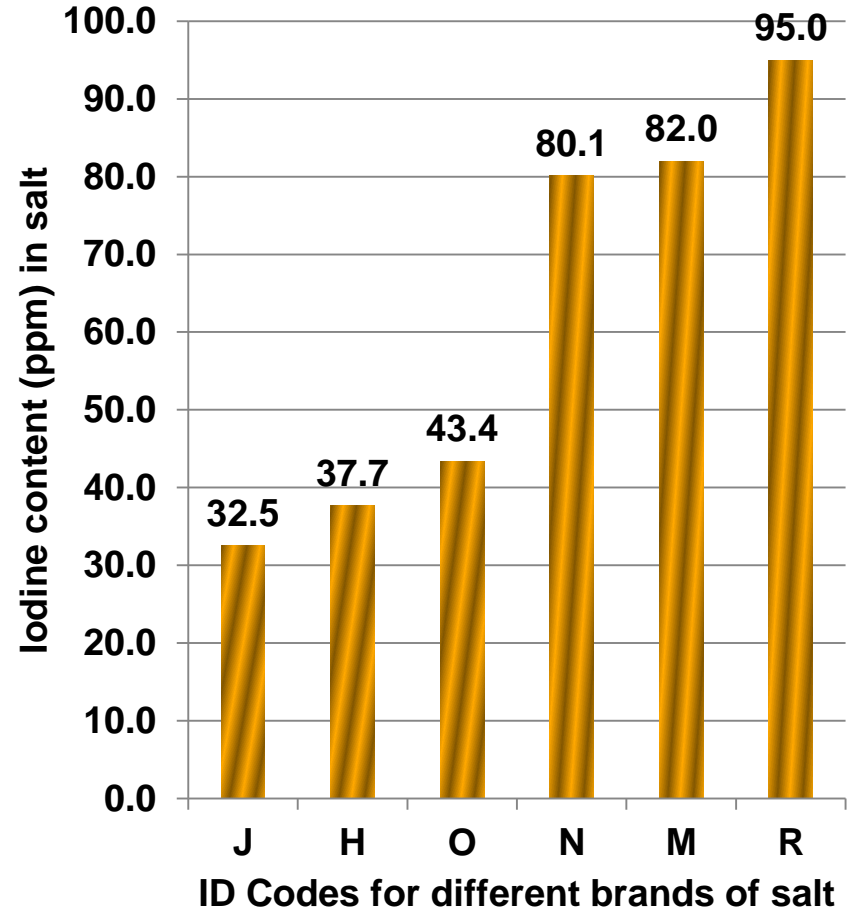


# Iodine content (ppm) in different brands of salt sold in NCD: 12 Brands of salt in 2010

Total of 6 (50%) brands with iodine content <30.0ppm

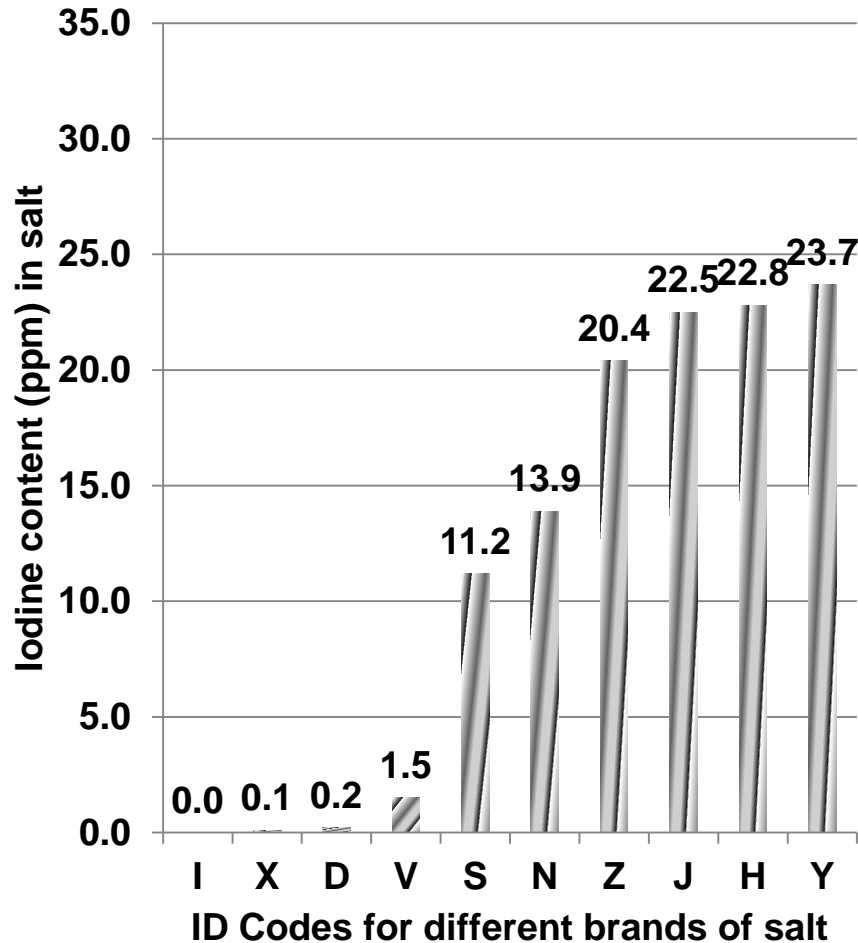


Total of 6 (50%) brands with iodine content  $\geq 30.0$ ppm

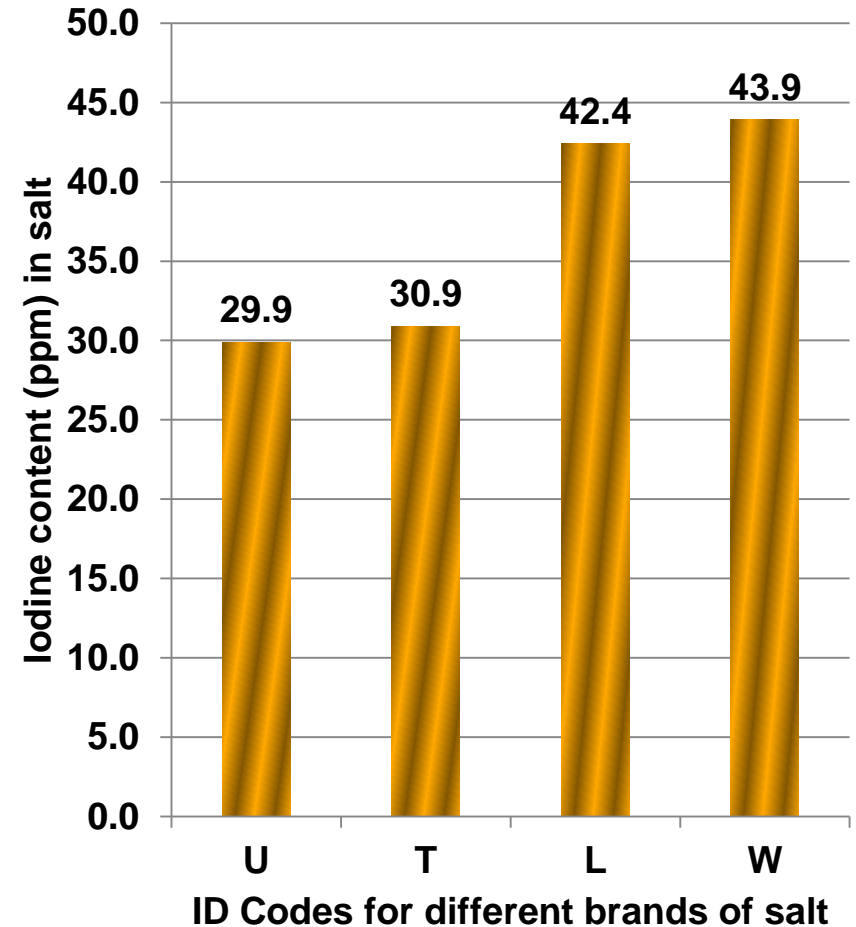


# Iodine content (ppm) in different brands of salt sold in NCD: 14 Brands of salt in 2013

Total of 10 (71.4%) brands with iodine content <30.0ppm



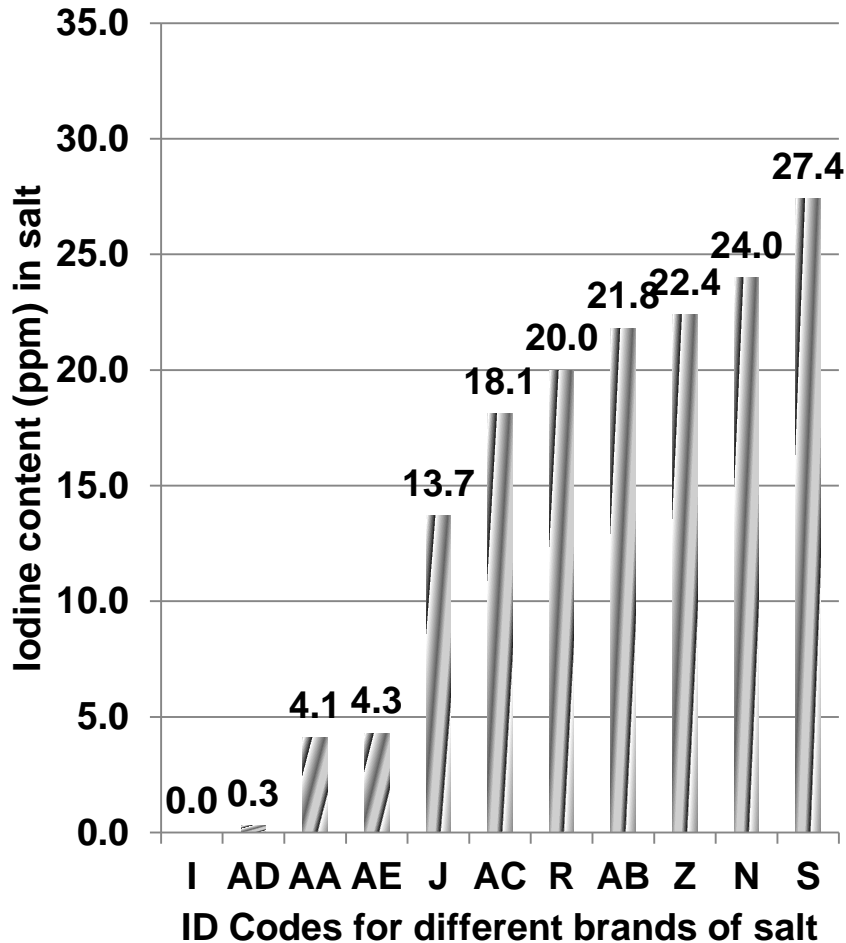
Total of 4 (28.6%) brands with iodine content  $\geq$ 30.0ppm



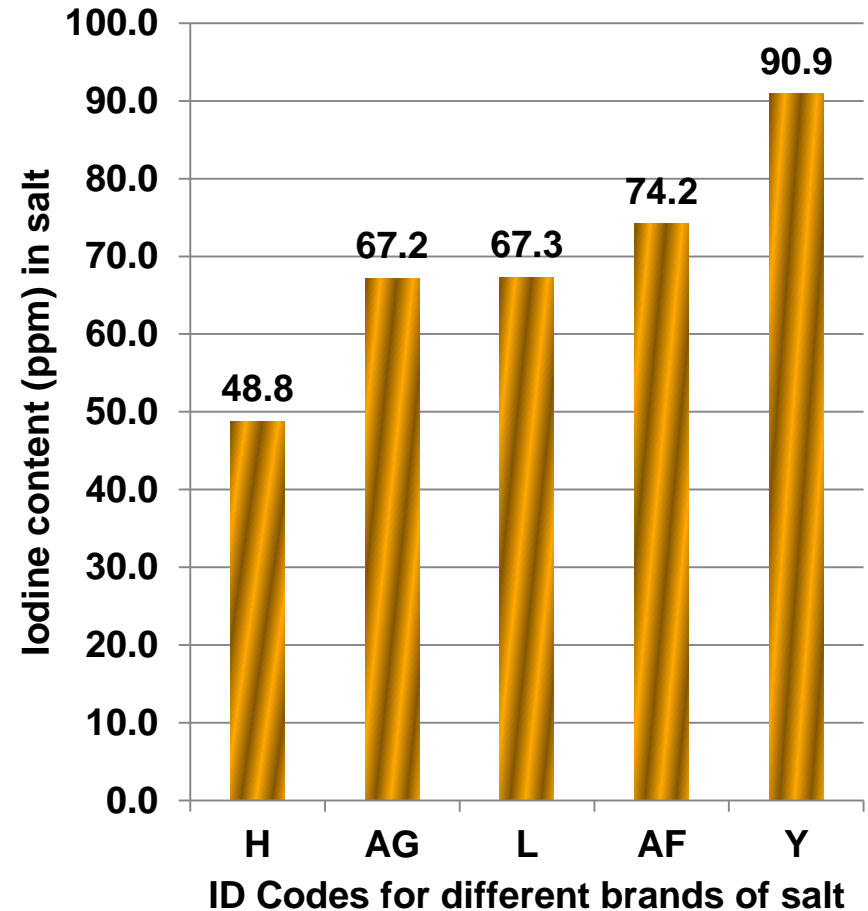
# Iodine content (ppm) in different brands of salt sold in NCD:

## 16 Brands of salt in 2014

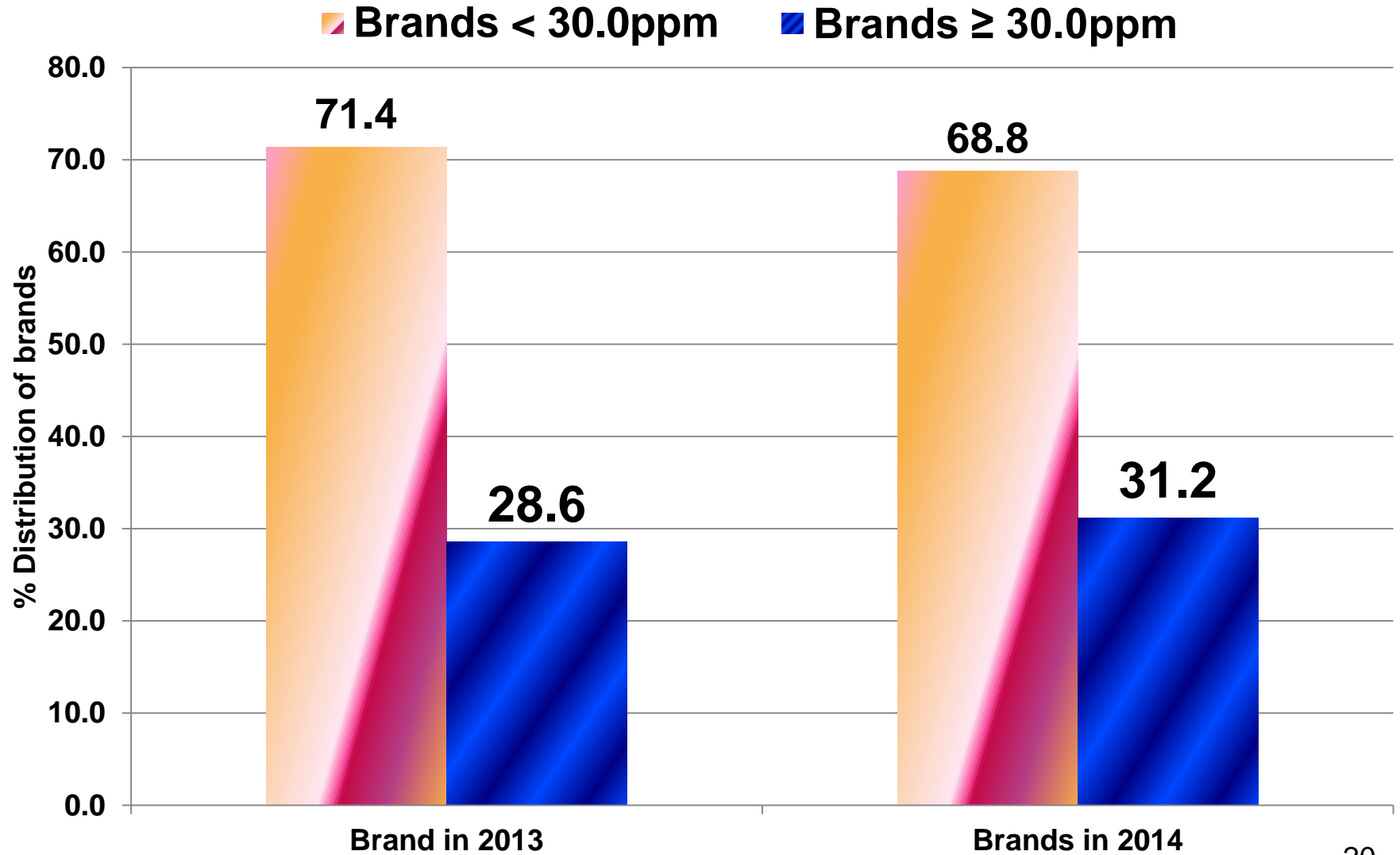
Total of 11 (68.8%) brands with iodine content <30.0ppm



Total of 5 (31.2%) brands with iodine content  $\geq 30.0$ ppm



# Comparison of % distribution of brands in 2013 & 2014 in NCD according to iodine content



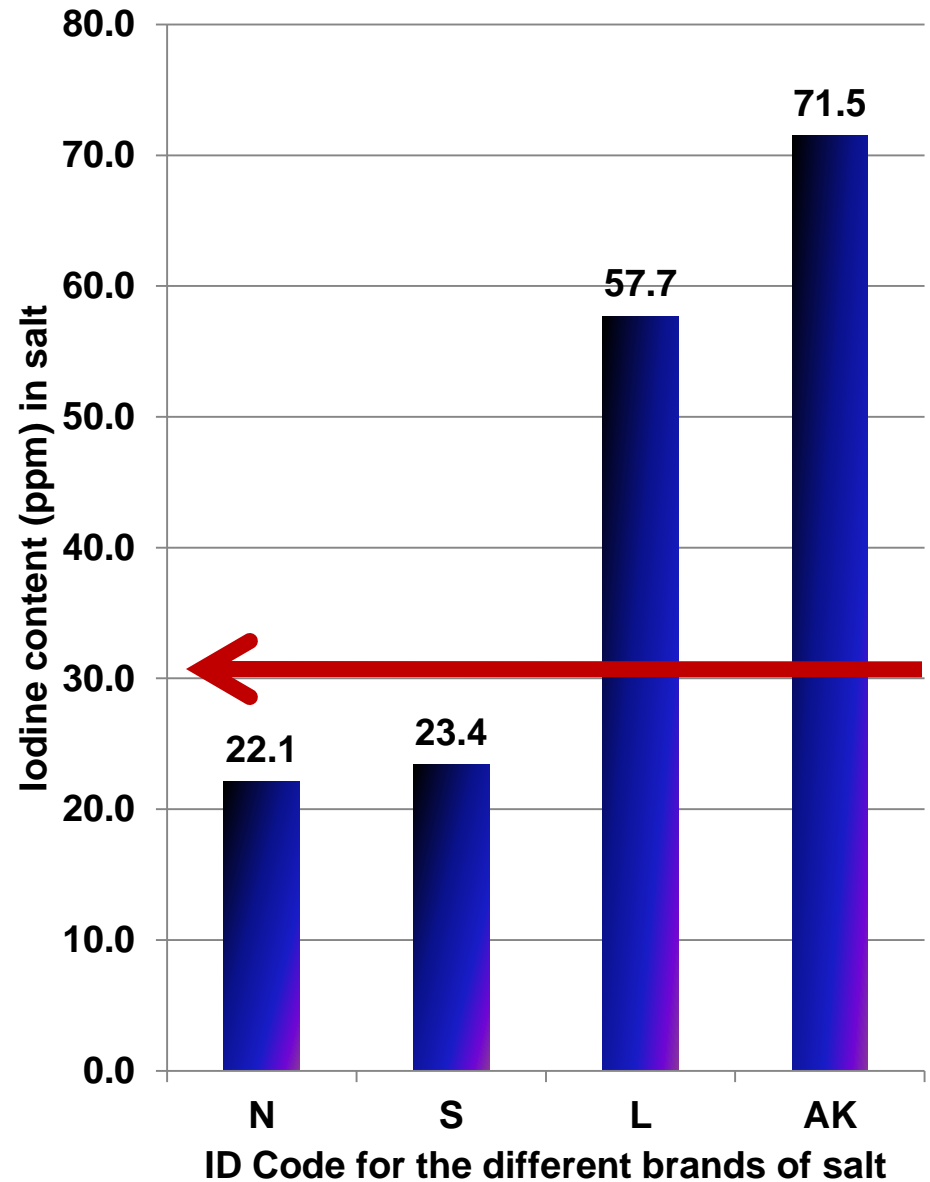
# OTHER CITIES

**Iodine content (ppm) in  
different brands of salt sold  
in Lufa district EHP in 2012**

**4 brands of salt:**

2 (50%) brands with iodine  
content <30.0ppm

2 (50%) brands with iodine  
content  $\geq$  30.0ppm

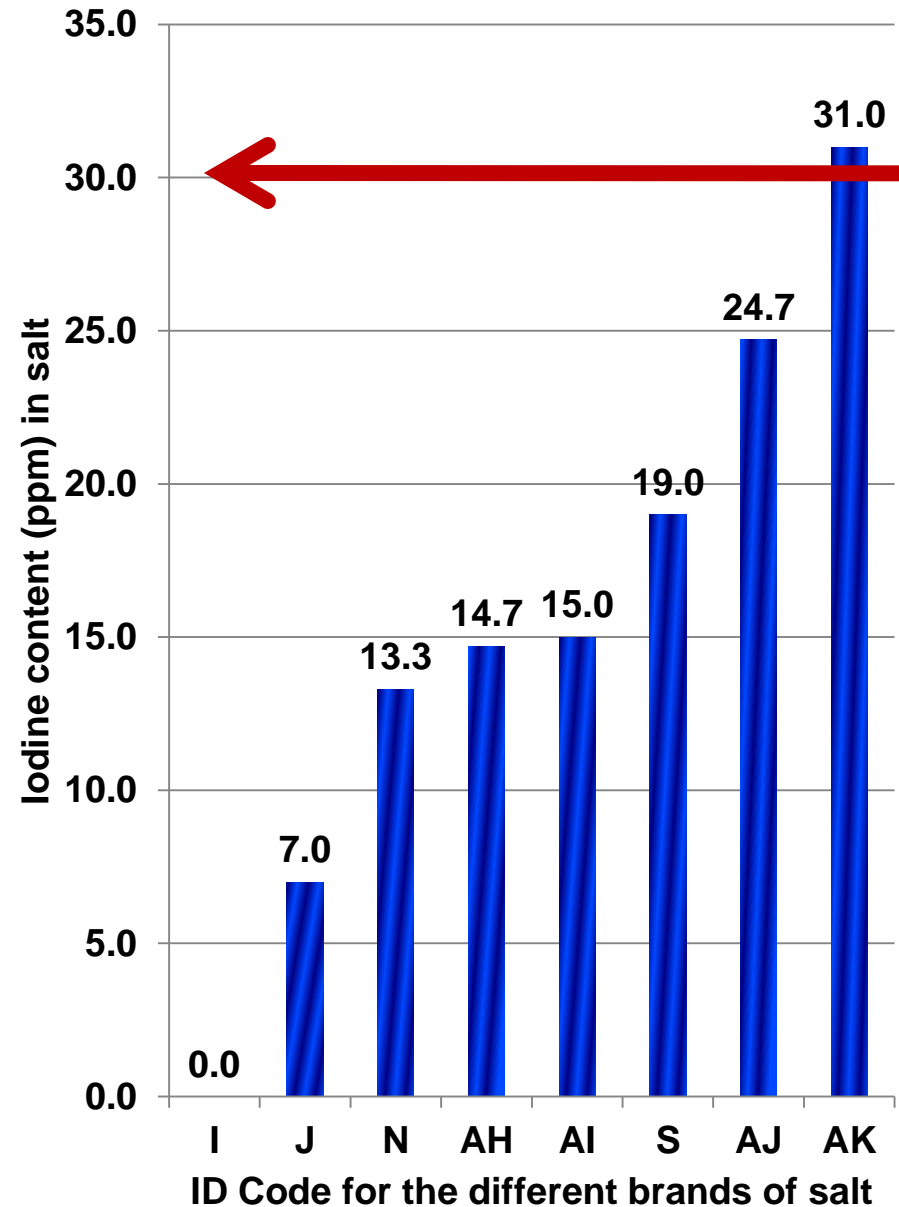


## Iodine content (ppm) in different brands of salt sold in Wewak in 2013

### 8 brands of salt:

Total of 7 (87.5%) brands with iodine <30.0ppm

Only 1 (12.5%) brand with iodine content  $\geq$  30.0ppm

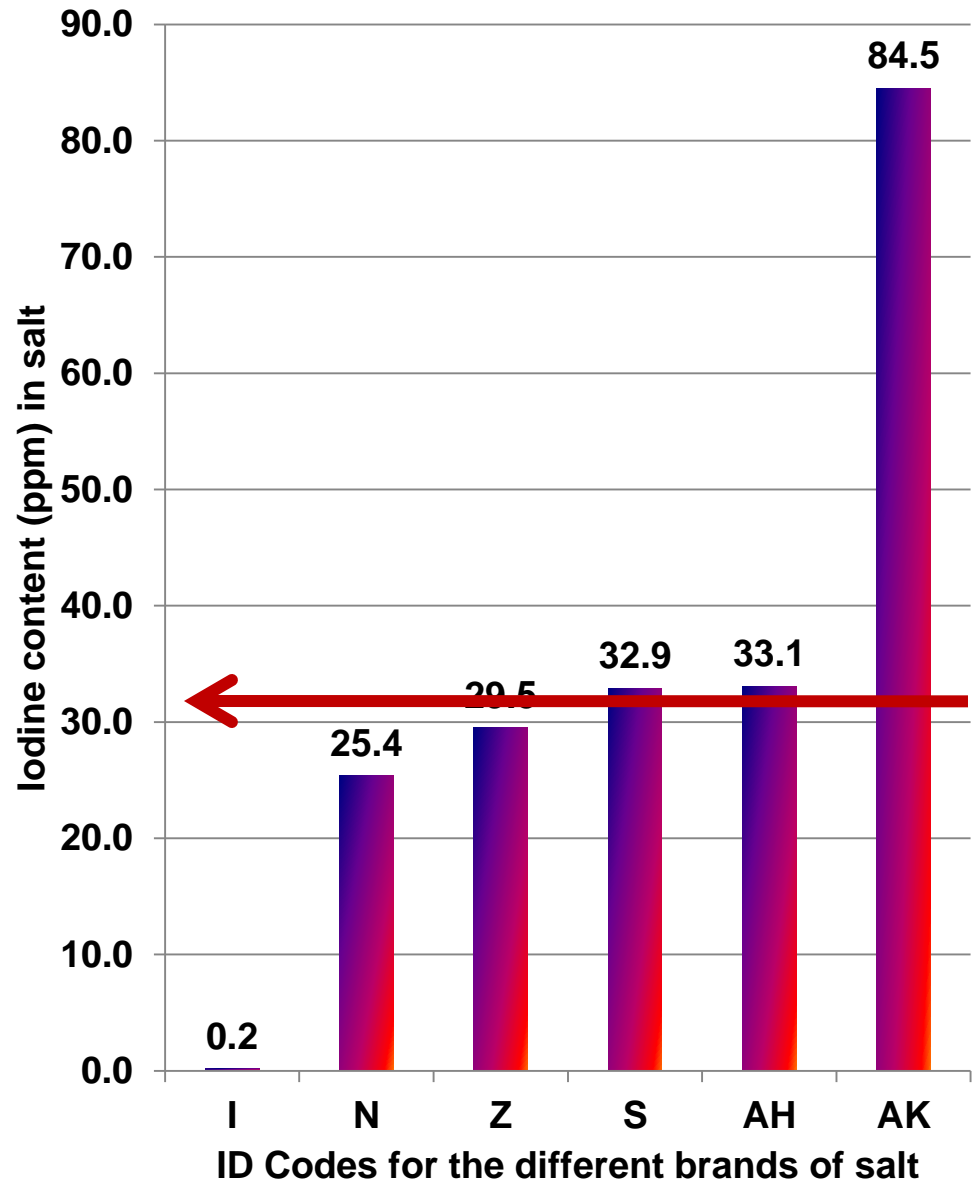


## Iodine content (ppm) in different brands of salt sold in Manus in 2014

### 6 brands of salt:

2 (33.3%) brands with iodine content <30.0ppm

4 (66.7%) brands with iodine content  $\geq$ 30.0ppm



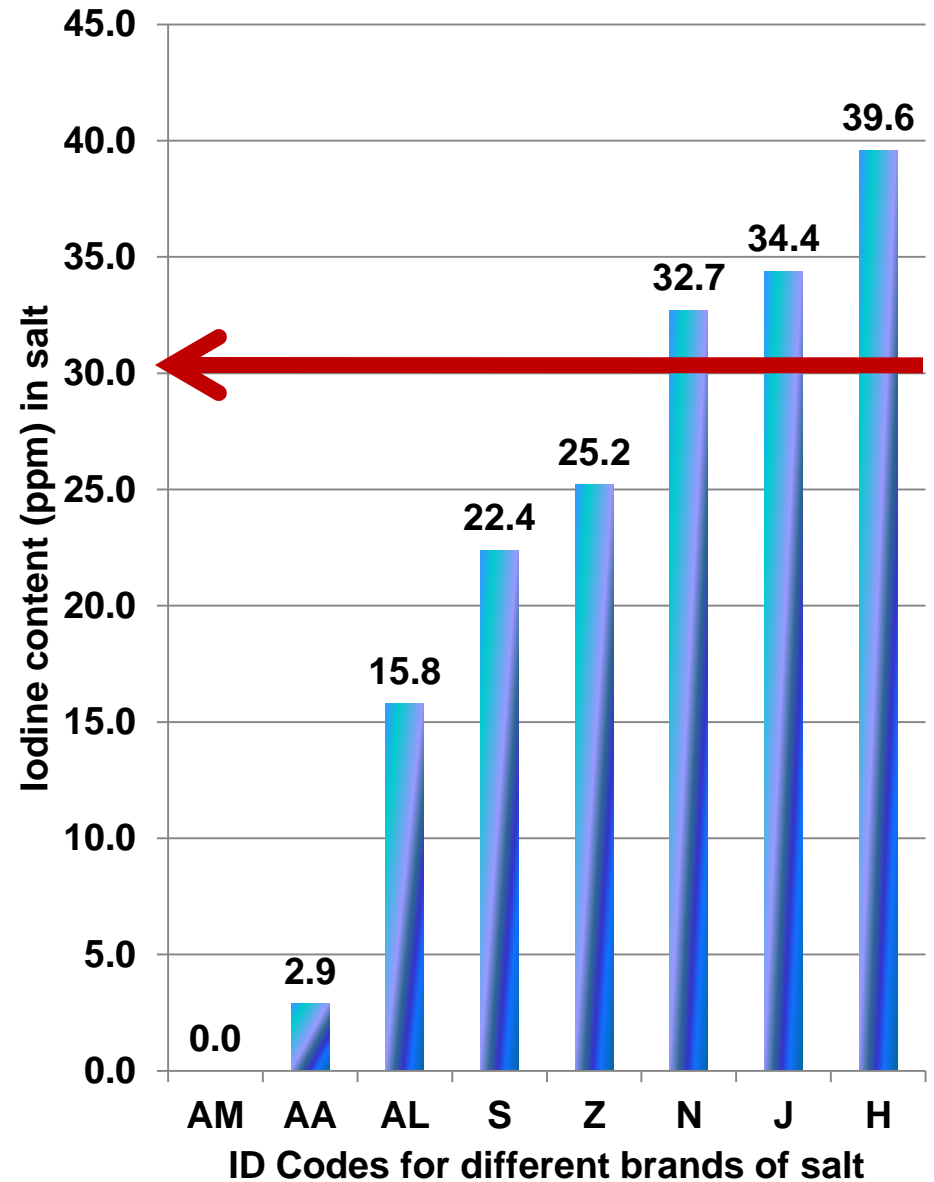


## Iodine content (ppm) in different brands of salt sold in Lae city in 2014

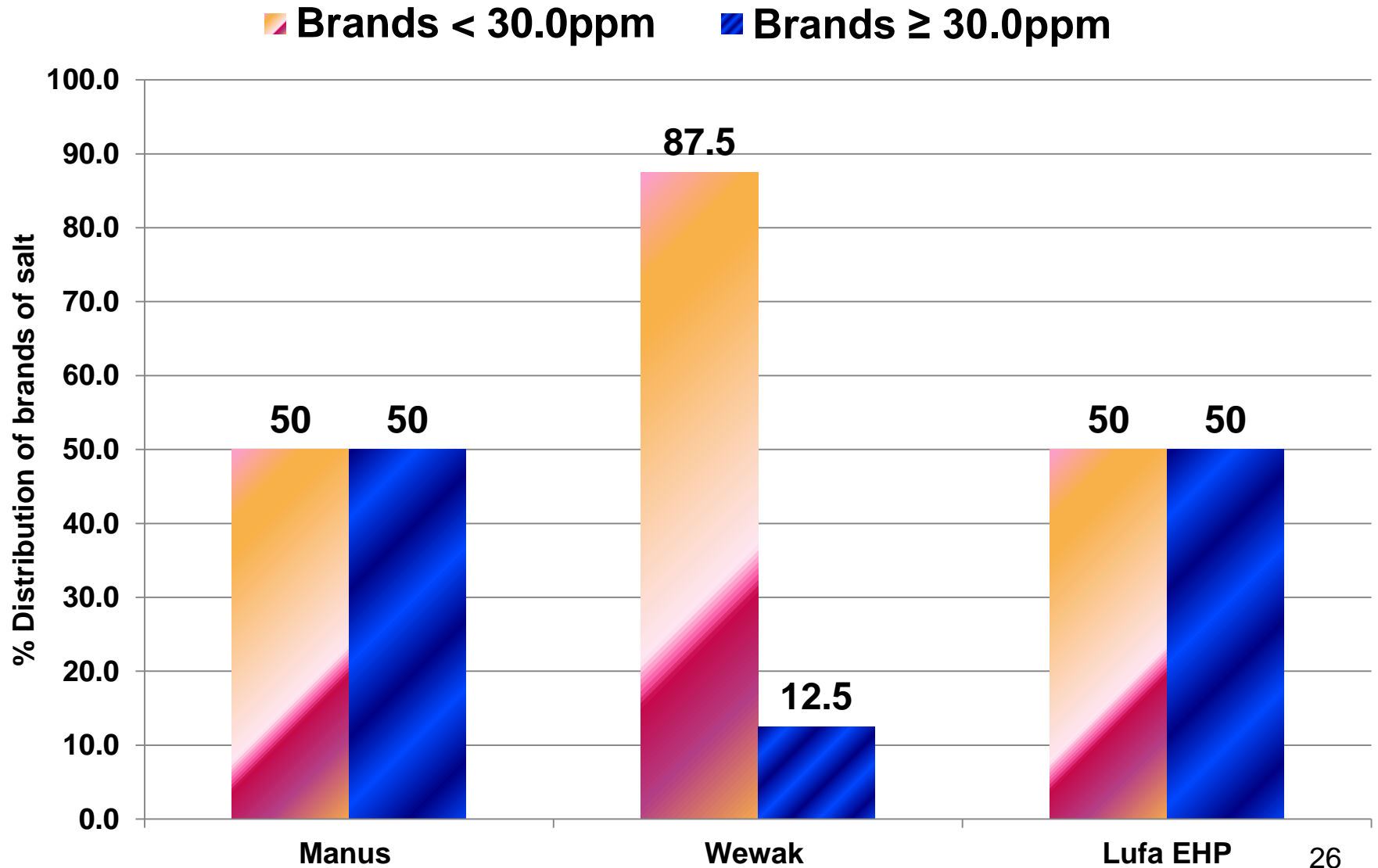
### 8 brands of salt:

5 (62.5%) brands with iodine content <30.0ppm

3 (37.5%) brands with iodine content  $\geq$ 30.0ppm



# Comparison of % distribution of brands of salt according to iodine content



## Results cont....

- Our results indicated that almost 20 years after enactment of the PNG Salt Legislation about 70% of the various brands of salt sold in NCD are in violation of the Legislation:
- **This indicates failure in the implementation of PNG Food Sanitation Regulation;**

## CONCLUSION

- National policies and strategies recognize the importance of salt iodization as a strategy to eliminate IDD;
- However more efforts are needed from all national stakeholders to actively implement it;
- Current status of salt iodization program in NCD can be characterized as “existent but needing strengthening”

## Conclusion cont.....

- Sustaining progress requires greater political commitment to USI, regular and routine reviews of the strategy, more systematic monitoring, and active enforcement of the **PNG Food Sanitation Regulation** to ensure that salt iodization becomes truly universal in PNG

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**THANK YOU**