



East, Central and Southern African
Health Community

MANUAL FOR INTERNAL MONITORING OF IODIZED SALT IN SMALL SCALE OPERATIONS

(Quality Assurance QA)

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Foreword

Over the last five years, the East, Central and Southern African Health Community (ECSA-HC) has continued to undertake advocacy and technical assistance to assist member countries to embrace and scale up food fortification initiatives as a key strategy to reduce micronutrient malnutrition in the region.

ECSA has been working with partners in direct response to resolutions of the Conference of Health Ministers to scale up food fortification initiatives as a critical strategy in fighting the devastating effects of micronutrient malnutrition among populations of member states. ECSA partners in the Regional Food Fortification Initiative include the A2Z Project, USAID, UNICEF, Micronutrient Initiative (MI), and ICCIDD, among others.

Part of the outcome of the intensified collaborative initiative, is a series of fortification guidelines developed to guide the industry during the fortification process of staple foods and provide government food inspectors a reference point in enforcing the standards.

Similarly, food control manuals have been developed for the Industry and the Government to provide technical reference resources that cover the entire fortification process to ensure that the fortified foods are safe and adequately fortified with the required fortificants.

This manual is part of a series of manuals on food fortification and is meant to directly contribute to the overall effort to strengthen food fortification in the region.

It is our hope that the use of this manual will help strengthen food control activities in our countries in order to deliver safe and quality fortified foods to the ECSA population.

Steven Shongwe
Executive Secretary
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The manual is as a result of joint work by distinguished food fortification experts in developing countries. During the drafting of this manual, consultations with senior officers from food control departments of the ECSA member states were made and input incorporated.

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Disclaimer

The content of this manual can be adapted to suit country specific contexts. In such a case, the content of the resulting document will be the sole responsibility of the organization adapting the manual and will not represent the views of the authors and that of the ECSA-HC. The Use of the content of this manual should be duly acknowledged.

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MANUAL FOR INTERNAL MONITORING OF IODIZED SALT IN SMALL SCALE OPERATIONS (Quality Assurance (QA))

Iodized salt has become the main source of iodine for most human beings, and in this way they are being protected against Iodine Deficiency Disorders (IDD) and its consequences, such as mental retardation, mutism, cretinism, goiter, and others. Salt is by nature a crystal compound that inhibits growth of bacteria and other pathogens. This natural quality allows for its fortification under very simple conditions especially taking into account the small amounts of the mineral iodine required by human beings. Frequently, raw salt does not comply with the usual specifications to be considered suitable for human consumption such as the need to be dry, have a relative high degree of purity as sodium chloride, and be free of solid contaminants (including remnant from dead animals and plants). In spite of these limitations, it is still used as a vehicle to deliver iodine to the human populations. Raw and inadequately refined salts have been used to deliver iodine to populations in many countries, and in so doing have contributed to the prevention of IDD's.

Raw and impure salts should only be iodized using potassium iodate. Iodate compounds are less soluble than iodide in water and are also less reactive than iodide and therefore more stable in contact with foods. Iodate has another advantage over iodide in that it is the easiest to detect through simple chemical reaction that involves formation of a purple color when in contact with starch. This easy detection of iodate has allowed for the use of a simple rapid test kit (RTK) to detect the presence of iodate in salt.

Many times, the use of the RTK has been proposed as a tool of choice in small scale operations of salt to carry out quality control of the iodized salt. However, this practice is less helpful since the "kit" will only detect the presence of iodate but not the amount of iodine added. Furthermore, it is unreasonable to expect that small scale operations would maintain even the simplest capability to do a more formal quality control. Therefore, it is proposed here that only quality assurance (storage and management of the fortificant, suitable packaging and labeling, and the simplest records of use of the premix) be required under these circumstances. However, the government would assume the responsibility of frequently visiting these artisan iodization operations to perform both inspection (a governmental function) and quality control (an industry responsibility). This strategy has been proven to be sustainable and successful in Central America for many years in ensuring consistent and adequate fortification of salt at small scale level.

This short manual describes the few steps that salt iodization carried out in small scale operations should take to assure that salt is safe and adequately fortified with potassium iodate.

A. QUALITY ASSURANCE OF THE POTASSIUM IODATE (OR PREMIX) RECEIPT, STORAGE AND USE

I. Objectives and Accountability

The purpose of the Quality Assurance of the Potassium Iodate (or premix) receipt, storage and delivery is to ensure that:

- The salt iodization center always has enough iodate inventories for at least 2 months of iodization.
- Potassium iodate (or premix) is stored under adequate conditions and is used based on the “first-in, first-out” basis.

Those directly responsible for achieving these objectives are the persons in charge of the salt iodization centers.

II. Procedures

a. Receipt and Storage of potassium iodate or premix of iodate

1. Every time a new lot of pure potassium iodate or a premix of iodate is received in the center, check that the containers are sealed, and that a certification stating the amount of iodine per kilogram be included¹.
2. Record in a form similar to **Tables A-1** and **A-2** the amounts of potassium iodate or premix of iodate, respectively, that is received, the lot number, and the name of the supplier.
3. Store the iodate or the premix in a clean dry area and away from chemical products or other potential contaminants.
4. Stack the iodate or the premix in such a way that the first that arrived is used first, following the “first-in, firstout” system.
5. Order more potassium iodate or premix when the balance is only sufficient for 2 months of salt production.

¹ Potassium iodate as salt usually contains 600 g of iodine per kilogram. Dry premixes of iodate, where it is combined either with salt or with calcium carbonate, are usually prepared to contain 50-60 g of iodine per kilogram; i.e. a dilution 1 to 12 and 1 to 10, respectively, of potassium iodate.

b. Preparation of premix

If the iodization center manufactures its own premix of iodate, prepare it as follows:

6. Weight 10 kilogram of potassium iodate and 90 kilograms of salt (or calcium carbonate), or other amounts as required for the procedures adopted by the country. Use **Table A-1** for recording.
7. Shake well the mixture, and pack it into clean bags.
8. Label the premix of iodate with the following information: IODATE PREMIX, Content of iodine = 60 g/kg, LOT #, and DATE.
9. Write down the amount of the premix produced both in **Table A-1** as well as in **Table A-2**.

c. Use of the premix to iodize salt

10. Estimate the amount of salt to be iodized in kilograms, and divide that amount by 1,000. This is the amount of premix of iodate that should be used. Record both the amount of premix that is used as well as the amount of salt that is iodized in **Table A-2**.
11. Apply the premix of iodate as usual, during grinding of the salt, or to be mixed as batch either manually or using appropriate equipment.

d. Packaging and planning

12. Iodized salt should be packaged in bags labeled with the name of the Iodization Center, address, brand, iodine level, and if possible date of production.
13. Estimate the amount of salt to produce, and order more premix of iodate if the amount that is in reserve will be sufficient for less than two month of production.

III. Records and Reporting

Keep updated the records in Table A-1 and A-2 and show them to the food inspector when required.



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