DRAFT TANZANIA STANDARD

Code of practice for the prevention and reduction of lead contamination in foods

TANZANIA BUREAU OF STANDARDS

0 FOREWORD

Lead contamination of food arises from numerous sources, including air, soil, food processing, food handling, and food packaging. Atmospheric lead from industrial pollution or leaded gasoline can contaminate food through deposition on agricultural crop plants. Soil lead arising from lead-containing ordnance stored on former munitions sites and from ammunition used in rifle or military firing, atmospheric deposition, or inappropriate application of pesticides, fertilizers, or sewage sludge can contaminate agricultural crop plants through uptake or through deposition of the soil on plant surfaces.

Sources of lead in food processing areas include lead paint and lead-containing equipment, such as piping and lead-soldered machinery. In the packaging area, lead-soldered cans have been identified as a very important source of lead contamination of food. Other packaging items that are potential sources of lead contamination include colored plastic bags and wrapping papers, cardboard containers that contain lead or are colored with lead-containing dyes, lead foil capsules on wine bottles, and lead-glazed ceramic, lead crystal, or lead-containing metal vessels used for packaging or storing foods.

Chronic exposure to lead at relatively low levels can result in damage to the kidneys and liver, and to the reproductive, cardiovascular, immune, hematopoietic, nervous, and gastrointestinal systems. Short-term exposure to high amounts of lead can cause gastrointestinal distress, anaemia, encephalopathy, and death. The most critical effect of low-level lead exposure is reduced cognitive and intellectual development in children.

This code of practice is therefore aiming to guide regulators, farmers, and food manufacturers as well as consumers to prevent or reduce lead contamination in foods.

In the preparation of this code of practice, assistance was drawn from; - CAC/RCP 56: 2004 - Code of practice for the prevention and reduction of lead contamination in foods.

1 SCOPE

This code of practice recommends on the practices based on Good Agriculture Practices and Good Manufacturing Practices to prevent or reduce lead contamination in foods along the food value chain. Compliance with this code does not confer immunity from relevant statutory and legal requirements.

2 TERMS AND DEFINITIONS

For the purposes of this document, the following terms and definitions apply.

2.1 Good Agricultural Practices (GAP)
collection of principles to apply for on-farm production and post-production processes, resulting in safe and healthy food and non-food agricultural products, while taking into account economic, social and environmental sustainability

2.2 Good Manufacturing Practice (GMP)
system to ensure that products meet food safety, quality and legal requirements

2.3 food
any substance, whether processed, semi-processed or raw which is intended for direct human consumption, and includes drink, chewing gum and any substance which has been used in the manufacture, preparation or treatment of “food” but does not include cosmetics, tobacco, medicinal products, narcotic or psychotropic substances, residues and contaminants

2.4 Food value chain
consists of all the stakeholders who participate in the coordinated production and value-adding activities that are needed to make food products.

2.5 Packaging materials
materials that have direct contact with foods

3. RECOMMENDED PRACTICES BASED ON GOOD AGRICULTURAL PRACTICES (GAP) AND GOOD MANUFACTURING PRACTICES (GMP)

3.1 Agricultural practices
3.1.1 Leaded gasoline is a major contributor to atmospheric lead. For instance dryers powered with leaded gasoline have been found to contaminate drying crops with lead. Farmers and processors should avoid using dryers or other equipment powered by leaded gasoline on harvested crops. Regulators should consider reducing or eliminating the use of leaded gasoline in agriculture.

3.1.2 Agricultural lands near industrial facilities, roadways, and ordnance depots, mining sites, rifle ranges and military firing ranges may have higher lead levels than more isolated lands. Land near buildings with weathered exterior paint also may have high lead levels, a particular concern when such buildings are situated near livestock or small gardens. Where possible, farmers should test lead levels in soils that are near lead sources or that are suspected of having elevated lead levels to determine if lead levels exceed recommendations for planting by regulators.

3.1.3 Regulators and extension officers should identify the land contaminated with lead arsenate pesticides from previous application.

3.1.4 Farmers should avoid using lands that have been used to store/treated with lead arsenate pesticide, such as former orchards, to grow crops that may accumulate lead internally (such as carrots, cassava and other root crops) or on their surface (such as leafy vegetables).

3.1.5 Farmers should be educated and informed on the health risks on growing crops on lands that have been treated with sewage sludge. Farmers should also avoid growing crops on lands that have been treated with sewage sludge that does not adhere to national maximum allowable lead levels.

3.1.6 Leafy vegetables are more vulnerable than non-leafy vegetables or root vegetables to deposition from airborne lead. Cereal grains also have been reported to absorb lead from the air at a significant rate. In areas like along the

high ways, industrial facilities and mining sites, where atmospheric lead levels are higher, farmers should be advised choosing crops that are less vulnerable to airborne deposition.

3.1.7 Farmers should avoid using non- registered pesticides and fertilizers that contain lead (such as lead arsenate pesticide) or may be contaminated with lead (e.g., improperly prepared copper fungicide or phosphate fertilizer) in agricultural areas.

3.1.8 Crops should be protected from lead contamination (e.g., exposure to atmospheric lead, soil, dust) during transport to processing facilities.

3.1.9 Home or small-scale commercial gardeners should also take steps to reduce lead contamination. For instance testing of the soil before planting, avoid planting near roadways and buildings painted with lead-based paint, good gardening practices for soils with elevated lead levels include mixing organic matter into the soil, adjusting soil pH to reduce availability of lead to plants, choosing plants that are less vulnerable to lead contamination, using liners to reduce contact deposition of soil on plants and build up gardening beds with lead-free soil. Gardeners should consult extension officers, for advice on what lead levels are too high for gardening and advice on how to garden safely in lead-contaminated soils.

3.1.10 Agricultural water for irrigation should be protected from sources of lead contamination and monitored for lead levels to prevent or reduce lead contamination of crops. For example, well water and waste water from treatment facilities used for irrigation should be properly protected and routinely monitored to prevent contamination.

3.1.11 Farmers should be trained on good agricultural practices to prevent lead contamination of farmlands and crops.

3.2 Drinking water

3.2.1 Regulators should monitor allowable lead levels or appropriate treatment techniques for controlling lead levels in drinking water.

3.2.2 Administrators of water systems with high lead levels should consider treatment techniques, such as increasing the pH of acidic waters, to minimize corrosion and reduce leaching of lead in the distribution system.

3.2.3 Where appropriate, administrators of water systems should consider replacing lead piping and other lead-containing fixtures.

3.3 Food ingredients and processing

3.3.1 Regulators should detect and monitor the levels of lead in foods and food ingredients.

3.3.2 Food processors should choose food and food ingredients, including ingredients used for dietary supplements that have the lowest lead levels possible. They should also consider whether the land used to produce crops has been treated with lead-containing pesticides or sewage sludge. The food processors should know the source of the raw materials and food ingredients.

3.3.3 During processing and preparation, maximum removal of surface lead from plants should be practiced, e.g., by thoroughly washing vegetables, particularly leafy vegetables; removing the outer leaves of leafy vegetables; and peeling root vegetables, where appropriate.

3.3.4 Food processors should ensure that the water supply for food processing complies with established maximum limits for lead.

3.3.5 Food processors should use non-leaded pipes and examine piping within facilities to ensure that older piping is not adding lead to water supplies. Such piping may include brass fixtures, in addition to lead-soldered pipes.

3.3.6 Food processors and food service establishments should use food-grade metals for all metal surfaces that come into contact with food and beverages.

3.3.7 Food processors and food service establishments should not use lead solder to repair broken equipment in food processing facilities. They should also not substitute non-food-grade equipment that may be present in a food processing facility for broken food-grade equipment.

3.3.8 Food processors and food service establishments should ensure that lead paint peelings do not become a source of lead contamination in processing facilities. If food processors and food service establishments carry out lead paint abatement, they should also ensure that appropriate clean-up procedures are followed to prevent further dispersion of lead paint and dust, which could create a greater hazard.

3.3.9 Food processors and food service establishments should occasionally test incoming raw materials and finished products for lead to verify that their control measures are functioning effectively.

3.3.10 Food processing facilities should be located in food processing designated areas to prevent lead contamination. For the food service establishments located in higher risks areas of lead contamination, the measures should be taken to prevent contamination.

3.4 Production, use of packaging and storage products

3.4.1 To provide maximum protection against lead contamination, food processors should not use lead-soldered cans.

3.4.2 Lead can be released from the solder surface itself, or from solder dust or solder splashes deposited inside the can during the can-making process. Methods for reducing splashing and dust formation include avoiding the use of excess flux, controlling exhaust over the work area to minimize dust deposition, controlling the temperature of the fluxed can body and solder, post-solder lacquering of the interior surface or interior side seams of cans, careful wiping of excess solder from finished cans, and washing soldered cans before use..

3.4.3 Tinplate used for food cans should meet national or international standards for maximum allowable lead concentration.

3.4.4 Lead dyes or lead-based printing inks should not be used for packaging, such as for brightly colored candy wrappers. Even if such wrapping does not come in direct contact with foods, children may be tempted to put the brightly colour wrappers in their mouths.

3.4.5 Plastic bags or boxes with exteriors treated with lead-based dyes or lead-based printing inks should not be used as primary packaging materials for food. Handling of these items during cooking or reuse by consumers for storing other food items can cause lead contamination.

3.4.6 Packing foods for sale in traditional lead-glazed ceramics should be avoided because these ceramics may leach significant quantities of lead into the foods.

3.4.7 Lead foil capsules should not be used on wine bottles because this practice may leave lead residues around the mouth of the bottle that can contaminate wine upon pouring.

3.4.8 Decorative ceramic ware that has the potential to leach unacceptable quantities of lead should be clearly labelled as not for food use.

3.4.9 Ceramic ware producers should use manufacturing procedures and quality control mechanisms that minimize lead leaching.

3.5 Consumer practices

3.5.1 Regulators should educate consumers about appropriate practices to reduce lead contamination in the garden and the home.

3.5.2 Consumers should avoid storing foods, particularly acidic foods or foods for infants and children, in decorative ceramic ware, lead crystal, or other containers that can leach lead. Foods should not be stored in opened lead-soldered cans or stored in reused lead-dyed bags and containers. Consumers should avoid frequent use of ceramic mugs when drinking hot beverages such as coffee or tea, unless the mugs are known to have been made with a lead glaze that is properly fired or with a non-lead glaze.

3.5.3 Consumers should wash vegetables and fruit thoroughly to remove dust and soil that may contain lead. Washing hands before preparing food will also help remove any lead-contaminated dust or soil from hands.

3.5.4 Where lead in water distribution systems is a problem, consumers should let water run from faucets before use to allow corroded lead from piping to be flushed out of the system, particularly if they are preparing foods for infants or children. Hot water from the faucet should not be used for cooking or food preparation.

3.5.5 Consumers should reject buying and consuming the foods originated from lead contaminated areas.

3.6 Consideration for certain foods

Calabash chalk, also known by other names such as “udongo wa pemba”, “udongo wa kigoma” is eaten by some women by leisure or to help alleviate morning sickness during pregnancy. Levels of lead in this product are often high (greater than 10 mg/kg) and may have consequences for the health of the developing fetus.

3.7 Handling of food products at the point of sales

Regulators should regularly train food retailers on good handling practices to prevent among others lead contamination. Retailers should be responsible to prevent contamination of foods with lead.