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• BUREAU OF AGRICULTURE AND FISHERIES STANDARDS •

TECHNICAL BULLETIN

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Issue	**BUKBOK-INFESTED RICE**
Background	Last August 2018, at least 330,000 sacks of imported milled rice were reported to be infested with bukbok or weevil. The Bureau of Plant Industry-Plant Quarantine Services through the National Food Authority (NFA) said that the rice will be fumigated to combat the pest while assuring the public that it is safe for consumption specifically if washed before cooking. Among the registered fumigants in the Fertilizer and Pesticide Authority (FPA) used for rice are phosphine and methyl bromide. According to the 2015-2016 Food Consumption Survey of the Philippine Statistics Authority (PSA), a typical Filipino consumes an average of 109.875 kilos of rice in a year. Rice as a staple food in every Filipino meal provides complex carbohydrates, protein, fat and other nutrients such as magnesium, phosphorus, manganese, selenium, iron, folic acid, thiamine and niacin.
General Description	Rice Scientific name: *Oryza sativa* L. Brown to white starchy cereal grain depending on the degree of milling undertaken. Prepared by washing the rice once or twice before cooking in a pot with the right proportion of water. Boiled and simmered in reduced heat until cooked. Bukbok English name: Weevil; Scientific name: *Sitophilus spp.* Weevil is one of the major insect pests that is capable of extensive damage not only to rice but also to other grain-based products. An adult weevil can grow 2.3-5mm long. This dull red-brown to black small snout weevil is characterized with four red to yellow spots on its back. The larval stage which feeds on the interior of the grain is white, small, fleshy, legless body with brown head. Fumigants A. Phosphine Pure form of phosphine or hydrogen phosphide is a colorless and odorless gas. But, its technical grade form smells 'garlicky' and 'fishy' due to impurities or presence of other compounds added to regulate gas release. Phosphine as a fumigant is liberated by the reaction of stable salt, such as magnesium phosphide or aluminum phosphide, with water vapor in the surrounding air. B. Methyl Bromide Methyl bromide is a colorless, highly volatile gas. It is odorless at low concentrations but has sweetish chloroform-like or strong musty odor at high concentrations.
Health and Food Hazard	Although weevils are medically harmless both to human and animals, these small snout weevils feed directly and lays egg inside rice grains which causes holes and a subsequent decrease in the weight of grain and market value of rice. Fumigants such as phosphine and methyl bromide are registered pest control for rice under the Fertilizer and Pesticide Authority (FPA). Prescribed period for exposure, ventilation and withholding period have to be observed when phospine and methyl bromide are used. Phosphine minimum exposure is 7 days while methyl bromide requires at least 48 hours. Phosphine ventilation and withholding period is a minimum of 12 hours and two days respectively. Methyl bromide requires a longer time versus

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	phosphine but the same number of days for withholding period. A specific dosage for a certain exposure period is employed and maintained to destroy grain pests in all their life stages (egg, larvae, pupa and adult) and prevent insect resistance. As per FPA Circular No. 4, Series of 1989, methyl bromide and phosphine are classified as restricted pesticides thus, must "provide adequate time for aeration after treatment before commodities are processed into food of feed". The international standard (Codex) has set a maximum residue level (MRL) of inorganic bromide in rice at 50 mg kg^{-1} and hydrogen phosphide at 0.1 mg kg^{-1}. Health risks associated with methyl bromide and phosphine are inhalation and exposure at high concentrations during fumigation activities.
Risk Mitigation	Quality rice have whole grains with no perceivable off-smell and presence of other seeds or foreign materials. To ensure food safety, store rice in a clean and tightly covered container. Wash rice thoroughly before cooking.
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