16.13.11

AOAC Official Method 967.24
Filth in Mushrooms
First Action 1967

(For maggots, mites, etc., in canned, fresh frozen, freeze-dried, and dehydrated products.)

A. Insects (First Action 1967; Final Action 1989)

(**a**) *Canned mushrooms*.—Pour contents of can evenly over weighed No. 8 sieve. Use 8 in. (20 cm) sieve, for containers of net weight <3 lb (1.4 kg) and 12 in. (30 cm) sieve for larger containers. Drain 2 min, and reweigh sieve and mushrooms to determine drained weight mushrooms.

Rinse container, and use rinsings and several additional portions water to rinse mushrooms on sieve (ca 500 mL total). Combine drained liquid with rinsings and filter through ruled paper. Examine residue on paper microscopically and determine total number of maggots in liquid.

Place 100 g drained mushrooms in high-speed blender, **945.75B(c)** (*see* 16.1.01). Add 300 mL H_2O and blend 30–45 s at ca 3000 rpm. Attain proper speed quickly by using setting of 1.5–2 final setting on variable transformer for few s at start. Fragments of mushrooms after blending should be 3–5 mm long. Pour mixture into nested set of 8 in. (20 cm) Nos. 20, 40, and 140 sieves, **945.75B(r)** (*see* 16.1.01). Rinse tissue 2–3 min with spray of tap water from aerator, **945.75B(a)** (*see* 16.1.01). Discard material on No. 20 sieve. Transfer residue from No. 40 sieve to 600 mL beaker with H_2O and bring total volume to ca 100 mL. Add 5 mL saturated aqueous crystal violet solution and heat to bp. Pour stained mixture into No. 40 sieve. Wash mushroom tissue, and maggots, if any, to edge of sieve and remove excess stain with tap water from aerator. Using wash bottle containing commercial 5.25% NaOCl solution, and gentle spray of tap water from aerator, alternately spray tissue with H_2O and NaOCl solution until stain has been removed from mushroom tissue. Wash tissue into 600 mL beaker and transfer to ruled paper, using vacuum. Avoid obscuring maggots with mushroom tissues. (Not more than 2–3 papers should be necessary.)

Transfer residue from No. 140 sieve to 600 mL beaker with H_2O and repeat staining, bleaching, and filtering as above.

Examine papers for maggots and other extraneous materials at 10–30 . Maggots are stained dark violet. Determine number of maggots in 100 g drained mushrooms and add to this value the number in proportionate amount of drained liquid calculated as follows:

$$\frac{100}{\text{Total g drained mushrooms}} \quad \text{total number of maggots in liquid}$$

(**b**) *Fresh, frozen, freeze-dried, and dehydrated mushrooms*.—For fresh and frozen mushrooms weigh 170 g test portion, and for dried mushrooms weigh 15 g test portion, into suitable container, and add enough H_2O to immerse mushrooms. Soften mushroom tissue by soaking several hours or, alternatively, by heating on steam bath or simmering 1½–2 h as necessary, followed by cooling 30–60 min to fully rehydrate. Quantitatively transfer contents to high-speed blender with 300 mL water and proceed as in (**a**), beginning " blend 30–45 s at ca 3000 rpm."

References: *JAOAC* **49,** 576(1966); **50,** 514(1967); **59,** 353(1976).

(For dried [not powdered] products.)

B. Light Filth (Procedure)

Thoroughly mix test product and weigh 15 g test portion. Transfer mushrooms to trap flask, **945.75B(h)**(*4*) (*see* 16.1.01), add H_2O, and let soak several hours, preferably overnight on steam bath, or boil 30 min. Cool to room temperature, add 30 mL heptane, **945.75C(l)** (*see* 16.1.01), and churn contents by hard, rapid pounding of mushrooms against bottom of flask, using vertical movement of rubber plunger. Trap off twice, filter, and examine microscopically.