LESSON PLAN

1. FOOD SERVICE SUPERVISORS/MANAGER CERTIFICATION B-322-2101

Topic 1.8 Pest Control in Food Service Areas Class Period: 1
Lab Period: 0

Enabling Objectives:

1.35 **INDENTIFY** steps involved with cockroach management in a food service facility

1.36 **DESCRIBE** the important aspects of stored products pest management in a food service facility

1.37 **EXPLAIN** the importance of rodent management in a food service facility

1.38 **DESCRIBE** the importance of fly management in a food service facility

Trainee Preparation Material:

A. Trainee Support Materials:

1. Student Workbook

B. Reference Publications: None

Instructor Preparation:

A. Review Assigned Trainee Material

B. Reference Publications:

1. NAVMED P-5010, Ch. 8
2. OPNAVINST 6250.4A
3. OPNAVINST 7303.4F
4. MLSTD 904A
5. BUMEDINST 6250.14
6. BUMEDINST 6250.12B
7. SBPCMAN
8. COMNAVSURFLANTINST 6000.1H

C. Training Materials Required:

1. Power Point Presentation

2. Slides

LESSON PLAN

1. FOOD SERVICE SUPERVISOR/MANAGER CERTIFICATION B-322-2101

Topic 1.8 Pest Control in Food Service Areas

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
1. Introduction	1. Establish contact. Introduce yourself and give any background on yourself that might be of interest. Establish readiness. Motivating statements. Tell the trainees how they will use the course material. Tell the trainees why they need to know the lesson material. Refer to Student Workbook and review objectives.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY

2. Cockroach management

a. Characteristics

(1) German cockroaches

(a) 5/8 in. long, flattened light brown insects with two dark longitudinal stripes on the thoracic shield behind the head

(b) Secretive habits: 80% of time spent in harborages during the day. 20% of time spent foraging

(c) High reproductive rate: female produces 200-300 offspring in her lifetime. One egg case (ootheca) every 60 days. Female will carry egg case until it is ready to hatch

(d) Immatures and adults may be located in the same harborages

(e) German cockroaches are most common in food preparation areas but travel great distances from harborages and can even be found in berthing

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY

(2) American cockroaches

(a) 1.5in. long, dark brown with no stripes

(b) Remain secluded in harborages during the day and forage at night

(c) Female produces 100-200 offspring in her lifetime. Egg cases are carried up to 4 days and are hidden in crevices

(d) Immature nymphs look similar to adults but are wingless. Immatures and adults will be found in the same harborages

(e) American cockroaches prefer damp dark areas and do not travel far from their harborage

b. Prevention

(1) The first step in preventing a cockroach infestation is conducting pierside or loading dock inspections by the Medical Department Representative:

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY

(a) Inspect a random selection of boxes or cartons, especially those holding fresh fruits and vegetables. Look for cockroach eggs, nymphs, and adults

(b) Medical can enhance the survey results through the use of a contact pyrethroid (PT 565) to inspect oncoming stores (do not spray directly onto fresh fruits and vegetables)

(2) The second step involves eliminating or reducing the following four essential requirements for cockroach survival:

(a) Harborages: cockroaches need hiding spaces to harbor and breed (3/16" opening or smaller space) such as cracks and crevices, unsealed space between equipment, torn lagging, voids, wire bundles, electrical boxes, and deck drains

(b) Food: cockroaches require very little for growth and development and can eat almost any organic matter including cockroach feces or cast skins

(c) Moisture: cockroaches will die in 7-10 days without water

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY

(d) Warmth: cockroaches do not produce their own body heat and require an outside source to grow and reproduce

(3) Eighty-five percent of all insect control is a result of a strong food service sanitation program by denying the insect population sources of food and water

(a) Conduct a thorough field day after every meal

(b) Remove standing water in scullery and galley

(c) Remove food spills and torn packages in storerooms as soon as they occur

(d) Food should only be consumed in the dining facility. Discourage the presence of food in other areas (berthing, workspace, etc.)

(e) Eliminate excess cardboard as it provides harborages and a food source from starch in glue

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY

c. Surveillance

(1) MDR shall conduct a survey every 2 weeks which involves an inspection of all food service areas (galley, scullery, wardrooms) and surveying all cracks and crevices with flushing agent. Storerooms should also be inspected/surveyed for insect activity

(2) Include all potential harborages (lagging, placed where cockroaches are living and hiding following drains, motor housings, cracks and crevices, survey with flushing agent or floor drains) in the surveillance program

d. Structure

(1) Eliminate harborages to prevent cockroaches from hiding, feeding, and breeding in these protected areas

(a) Seal cracks and crevices with silicone or vinyl caulking

(b) Prohibit entry into false bulkheads by sealing cracks and filling holes with silicone

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY

(c) Repair or replace all torn or damaged lagging

e. Pesticides

(1) Pesticides are to be applied only when all other prevention efforts fail. They must be applied by certified personnel only

(2) Emphasize safer/more stable chemicals. Combat bait stations, gel baits, and Permadust can be used as part of the control program

(3) Only crack and crevice treatments are recommended as a pesticide application. Space treatments are not authorized

(a) Emphasize the importance of preparing a space for treatment which involves removal of all food items, covering all equipment, opening drawers and doors, covering utensils, plates, and glassware

(b) Emphasize the importance of sweeping the deck after treatment. Pesticides do not penetrate or kill egg cases and they must be removed to eliminate the next generation

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY

(c) Emphasize the importance of staying out of the area for at least 30 minutes after application. Preferably refrain from a complete field day for at least 24 hours after treatment. Then, thoroughly clean all food service areas with water and detergent

3. Stored Products Pest Management

a. Characteristics and Types

(1) Small, secretive, prolific insects which infest more than 50% of all ships. There are approximately 100 species of stored products pest insects; those which are of most concern are the beetles and moths

(2) They thrive in confined areas of warmth and moisture

(3) The most common pests include saw-toothed grain beetle, flour beetles, and dermestid beetles. Dermestid beetle larvae are the only stored products pests of significant medical importance as they have hairs which can cause gastroenteritis if ingested

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY

b. Prevention

(1) Pierside or loading dock inspections:

(a) Use flashlight and look for signs of infestation (live or dead insects, pin holes where insects have entered or exited packaging, frass-insect excrement, cast skins, webbing)

(b) Examine most commonly infested products: grain products, pasta, beans, cake mix, flour. These products are basically processed grain, the preferred food choice for these insects

(2) Stock rotation: first in, first out

(a) Storeroom sanitation: immediately cleanup all spills, and discard or secure broken packages. Spills are similar to unrotated stock, permitting the development of infestation

(b) If facilities permit, place commonly infested stored food items in refrigerator or freezer to prevent infestation from developing

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY

c. Surveillance

(1) Description of the most common stored products pests:

(a) Saw-toothed grain beetle: most common insect in stored products. Adult is slender, flat, brown, 2.5mm long with six saw-tooth projections on each side

(b) Red and confused flour beetles: adult is shiny, flattened, reddish brown, 3.5mm long with small pits on the head and ridges on the wing covers

(c) Dermestid beetles: adults are dark with colorful patterns on their wings. Larvae are pale white, 6.25 mm. long, with numerous hairs. Hairs can break off into food products and cause gastroenteritis if ingested

(d) Indian meal moths: adults dark colored with silver patches on forewings. Larvae are yellowish and spin silk (webbing) which can be found in food items

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY

(e) Weevils: many species, but rice weevil is the most common. Adults have 4 pale spots on wing covers and a short proboscis, which is used to chew into containers

(2) Medical department must conduct monthly storeroom inspections

(a) Special emphasis should be placed on evaluating the commonly infested products: grits, cornmeal, farina, fry mix, pasta, barley, cookie and cake mix, flour, beans and peas, spices, cereal

(b) Recognize the signs of insect infestation

(c) Immediately remove infested product and either freeze for at least 96 hours or discard. Render all infested stores as unusable by cutting bags open, crushing pasta, etc.

(d) The allowable number of pests per product is as follows:

(1) One Dermestid beetle per package

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY

(2) 3 flour beetles per pound

(3) 7 or more sawtooth grain beetles or other insects not listed above per pound

d. Sanitation

(1) Promptly clean up spills in storerooms. Dedicate a vacuum for this purpose. A strong sanitation program will eliminate readily available food sources for pests

(2) Discard or seal broken packages

e. Structure

(1) Use pallets to keep food stock items off the deck

(2) Maintain adequate ventilation, to ensure a cool and dry storeroom

(a) There are no pesticides approved for use on stored products pests

(b) Pheromone traps are the only authorized control measure for store products pests. These products are applied as a space treatment

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY

4. Rodent Management

a. Most common types of rodents and their capabilities

(1) Norway rat, roof rat, and house mouse are historically the most common medically important rodents.

(2) Rodent physical capabilities:

(a) Rodents can jump several feet and are agile climbers

(b) They can pass through 1 inch openings

(c) They can walk across wires

(d) They can climb vertical pipes and walls

(e) They can swim up to 1 mile

(3) Generally, litter sizes are 6-12 young with a range of 3-12 litters per year. Life span: 1 year for mice, 2-3 years for rats

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY

b. Medical and economic importance

(1) Rodents and parasites on rodents can spread plague, murine typhus, salmonellosis, Lyme disease, Hantavirus, and leptospirosis

(2) Rodents destroy a tremendous amount of food through consumption, gnawing, or contamination with urine and feces

c. Prevention

(1) Rat guards: according to BUMEDINST 6250.14, rat guards must be constructed of galvanized sheet steel or sheet aluminum alloy and designed with a 36 in. minimum outside diameter placed at least 6 ft. from the pier and 2 ft. from the ship with the point of the cone facing the ship. Fasten the rat guard tightly to the line and secure all cracks and gaps

(2) Conduct pierside or loading dock inspections of all incoming subsistence items. Look for damaged boxes and fecal pellets

(3) Gangways and loading docks should be well lit. Most rodents travel along dark paths, bulkheads, and under pallets and shelving

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY

(4) Position dumpsters 100 feet from the ship or facility. Keep garbage containers tightly sealed or closed

(5) Barrier materials should be used to prevent rodent access to food stocks. Screen or seal all rodent entries

d. Surveillance

(1) For ships, BUMEDINST 6250.14 requires a valid deratization certificate for all ships and submarines every 6 months. Ship must be certified rodent free to visit any foreign port. Deratization inspections are performed by a certified quarantine inspector

(2) Signs of rodent infestation include droppings, urine, rub marks, footprints, and gnaw marks. Fresh droppings will be black and shiny in appearance. Old droppings will be gray and dull and powdery when crushed. Rodent urine fluoresces in UV light

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY

e. Sanitation

(1) Proper storage/disposal of garbage is extremely important. Garbage cans should be positioned away from food service areas in approved containers with tight fitting lids

(2) A strong sanitation program will eliminate readily available food sources for rodents and mice by performing prompt cleanup of spilled food

(3) Proper disposal of damaged goods that may also attract rodents or be contaminated with urine and feces must also occur

f. Control measures

(1) Glue boards are recommended as a control measure. Lay glue boards flat or rodents may walk off with unsecured glue boards stuck to their backs

(2) Wooden snap traps are also recommended for light rodent infestations. Placement of trap is as follows:

(a) Place trap on deck flush against wall or bulkhead

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY

(b) Bait with a mixture of oatmeal and peanut butter, or other suitable attractant

(c) Check daily

(d) Wash snap trap with soap and water

(3) Anticoagulant baits are only recommended for very heavy rodent infestations

5. Flies

a. Description and importance

(1) The housefly is the most common fly in food service areas. Smaller, black fruit flies may also be present, especially near or in fruits and vegetables. Drain flies are also nuisance pests in sinks and heads

(2) Fly larvae (maggots) are pale white, legless, with a dark head containing two mouth hooks. Fly pupae resemble cockroach egg cases but do not have ridges. Each pupa contains one adult fly

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY

b. Prevention

(1) Sanitation is main method of prevention. Spilled food items (particularly blood and other meat juices) and broken packaging attract flies. Rotten vegetables can also support fly maggots. Double bag infested products and discard

(2) Pierside inspection of stores for pupae or larvae help prevent flies from coming aboard

(3) Place fruits and vegetables in a cool storage area

c. Surveillance

(1) Look for maggots, pupae, and adult flies landing on spillage

d. Sanitation

(1) Proper storage/disposal of garbage is extremely important. Garbage and refuse should be stored in tightly covered containers. Trash cans should be maintained in a clean condition

(2) Promptly clean up any liquid or food spills

DISCUSSION POINT RELATED INSTRUCTOR ACTIVITY

e. Control measures

(1) Ensure all food items are covered

(2) Screen doors and windows to prevent fly entry

(3) Air curtains over doors will also prevent fly entry

(a) Adequate for size of door

(b) Properly installed and operated

(4) Good old fashioned fly swatter

(5) Fly paper or bug zappers are not authorized

(6) Contact local medical entomologist for assistance with fly control

6. Summary

a. Cockroach management

b. Stored products pest management

c. Rodent management

d. Flies

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