

# RESTAURANTS & FAST FOOD OPERATIONS

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## Introduction

Restaurants and fast food establishments present a major challenge in terms of preventing pest problems. This is partly because they are highly vulnerable to pest invasion, and because they contain many resources to sustain pests which have entered. But it is also because some pest control measures which are suitable in other situations are not permissible or are ineffective in commercial kitchens.

Despite regulations and official inspection procedures aimed at minimizing hygiene and pest problems in these establishments, many continue to have longstanding problems with insect pests, particularly German cockroaches. In some cases, the management and employees in these establishments have given up all hope of having freedom from pests and simply focus on concealing the situation from their clientele.

Fortunately, cockroaches, flies and other pests found in these establishments can be controlled, and future problems can be avoided by using the latest pest management materials and methods. However, before tackling the pest problems, it is important to understand the factors which favour pests in restaurants and fast food establishments, and to recognize

some of the factors which can make pest management difficult.

## Factors Favouring Pests

### Factors Favouring Pest Entry

- Food provisions infested with pests may be brought in.
- Cases of canned or bottled drinks may be a source of pests.
- Contract laundry services may introduce pests on infested table linen.
- Employees from infested homes may introduce cockroaches on personal belongings.
- Pests may enter from adjoining buildings through cracks in common walls.
- Exterior lighting may attract flying insects.
- Hot and steamy kitchen conditions encourage employees to open exterior doors and windows, thus allowing pest entry.
- Ornamental foundation plantings provide pest harbourages close to doorways and make pest invasion more likely.

### Factors Favouring Pest Survival

- Warm buildings and hot spots near stoves, steam kettles, etc.
- Food supplies of many kinds, including garbage.
- Water from taps, condensation, drains, toilets, etc.

- Numerous harbourages, including false ceilings, machinery voids and hollow table legs.

### **Factors Favouring Pest Dispersal Within Building**

- Conduits for water, electricity and heating or cooling systems allow concealed movement of crawling pests.
- Ceiling voids allow easy movement around kitchen and dining areas.
- Constant employee traffic between kitchen areas and dining areas allow migration of pests in restaurants.
- Food scraps dropped by patrons provide pest feeding opportunities away from kitchen areas.
- Dim lighting in some restaurant bars and dining areas encourages the activity and spread of nocturnal insects.

### **Factors Making Pest Management Difficult**

- It is difficult to treat 24-hour establishments without disturbing the clientele.
- Grease deposits in kitchens can quickly render insecticide deposits ineffective.
- High kitchen temperatures speed the degradation of insecticides.
- Cleaning measures can quickly remove surface deposits of insecticides.
- Most residual insecticides are only permitted as crack and crevice applications in food areas, but such applications are virtually impossible without

causing some runoff or bounce-back.

- There may be employee and management apathy about pests, and thus, a reluctance to make an effort to get rid of them. /1

### **Planning A Pest Management Program**

There are no quick and easy ways of solving pest problems in a restaurant, particularly if the pests include a well-established population of German cockroaches. An effective pest management program involves hard work, both by the pest management professional and by the on-site staff.

If previous pest programs have failed to solve the problem, it is likely it will take more time and more money (perhaps five or ten times more money) to do an effective job. Some clients who have seen nothing but a token post control effort may be surprised at how much effort it takes to effectively deal with pests. They may have heard of companies specialising in pest elimination and figured they must use some magic remedy. But there are no magic remedies and no substitutes for hard, thoughtful work. When the amount of time, materials and know-how necessary to carry out an effective pest management program is thoroughly explained to the client, price objections can usually be overcome. If objections remain, they can often be overcome by explaining the dangers of a pest problem in terms of potential disease transmission, loss of reputation, and by assuring a client that even

longstanding problems can be solved.

The details of pest management programs will vary from place to place, depending on such factors as climate, construction methods and materials, the presence of adjoining buildings, maintenance standards, sanitation levels and the level of commitment of the client. Maintaining total freedom from pests will require a much greater commitment from the client than if a low level of pests is tolerated.

The following guidelines indicate the kind of approach needed to deal with an existing problem and to minimize future problems. This approach involves the integrated use of non-control agent methods and a range of insecticides which are especially suited for use in restaurants and fast food establishments. The Pest Management Systems contains the following elements in the sequence they would take place:

1. Obtaining management co-operation.
2. Inspection of premises.
3. Developing recommendations for non-control agent measures.
4. Developing recommendations for control agent treatments.
5. Obtaining co-operation of on-site staff.
6. Implementation of initial treatments.
7. Implementation of follow-up treatments.
8. Monitoring the results.

In most cases, because of the possibility of reinfestation from incoming materials, the above

sequence would need to be repeated so that in effect it becomes a cyclical process. However, the details of each cycle would vary because actions in the previous cycle would have changed the pest situation.

### **1. Obtaining Management Co-operation**

The level of co-operation and commitment of the site management will influence the whole program. For instance, management co-operation will be needed to gain site access when the premises are closed to the public, and to get into locked storage areas. Moreover, without co-operation at the highest level, it is unlikely that people at lower levels will co-operate and make necessary changes.

Management co-operation can be encouraged by pointing out the benefits of a successful program. These benefits not only include freedom from worry about customer complaints and loss of reputation. There is also the spin-off benefit that employees often develop a new sense of pride, duty and loyalty when they work for management who maintain a wholesome work environment and care about the well-being of the clientele.

### **2. Inspection of Premises**

An initial inspection of the premises, inside and outside, must be conducted to identify the type and extent of pest problems, and factors contributing to those problems. In small premises an inspection may take no more than 30 minutes, but in large premises it may require many hours. In either case, how well this

inspection is conducted will largely determine the suitability and effectiveness of later efforts.

Equipment for inspection should include a good flashlight and extension mirror for aiding inspection of hard-to-reach locations, screwdrivers and other tools for gaining access to possible harbourages, pyrethrum aerosol or dust for flushing hidden insects, and a notebook for recording data.

After first becoming familiar with the general layout of the premises, it is important to talk with personnel who work on the premises. Asking them where they have seen pests and when they first started seeing them may give clues as to their origin. Identifying the origin of pests is valuable, because countermeasures will be quite different if insects entered through crevices or conduits from an adjoining building than if they were carried into a restaurant on food provisions.

No matter how the pests originally entered, the inspection must identify any factors which enable them to survive and multiply once they have arrived. This involves identifying food, water and harbourages needed by pests.

Food sources for insects might include the following:

exposed food (e.g. fresh vegetables), food spills, buildup of food debris in crevices and drains, grease deposits, garbage, and rodenticide bait.

Water sources might include the following: dripping taps, condensation, sinks (including

drainage traps), drains, toilets, drip pans beneath bar pumps, wet floors, and unfinished drains.

Harbourages might include the following: wall crevices around plumbing fixtures or work tables, hollow legs of tables, corners and crevices in worktops, cabinets, food carts or shelving, dark corners of rooms, conduits or junction boxes, machinery voids, power outlets, wall voids, ceiling voids, behind notice boards, and inside food packaging.

The inspection is often the most challenging part of the whole program. Key findings regarding pest invasion routes, factors favouring pests and actual pest locations should be recorded to form a baseline for future comparisons and to help by recording such factors as cleaning methods and schedules, when the kitchen is in use, when the premises are open to the general public and special areas of risk, such as live fish or lobster tanks.

### **3. Developing Recommendations for Non-Control agent Measures**

Based on the inspection, a range of non-control agent pest management measures will be developed which may include the following:

- Fitting tight, self-closing exterior doors, particularly for the kitchen.
- Caulking crevices around doors, windows and vents.
- Fitting insect-proof screens on windows and vents.
- Trimming grass around building.
- Establishing a bare strip of gravel, crushed stone, tarmac or concrete against the foundations of the building.

- Eliminating organic mulches around outdoor plantings and indoor planters and substituting crushed shell, stone or gravel.
- Cleaning gutters and outside drains.
- Ensuring good drainage under air conditioners.
- Keeping rubbish bins closed, and cleaning and emptying them regularly.
- Eliminating outside bird-roosting sites.
- Replacing any exterior insect-attracting lighting with sodium vapour lamps which have low attractancy.
- Sealing crevices and other insect accesses from adjoining buildings.
- Sealing crevices around plumbing fixtures, work surfaces, etc. in food handling areas which may harbour pests.
- Repairing grouting in wall and floor tiles.
- Repairing plumbing leaks
- Checking incoming supplies for pests and immediately disposing of cardboard boxes.
- Upgrading food storage, waste handling and cleaning programs to reduce the food available to pests.
- Replacing wooden racks, shelves, cabinets, etc. with metal ones to discourage pests such as cockroaches which like wooden surfaces.
- Identifying and isolating slow-moving items which have been a past source of stored product pest problems (e.g. spices).
- Using electrocuting light traps outdoors for flying insect control.

These non-control agent recommendations should be reported to the client and an action plan discussed. However, it is the proper role of the pest management professional to help prioritize such work from a pest viewpoint. Failure to implement the non-control agent recommendations will force a greater reliance on control agent treatments and reduce the chances of improving the pest situation. For instance, regularly cleaning floor drains is a surer way of reducing problems of drain flies than periodic applications of insecticide.

#### **4. Developing Recommendations for Control agent Treatments**

Control agent treatments will be based on the findings of the inspection and will be tailored to the particular pests and the target sites. Modern products are labelled for use against most insect pests and for most sites of use in and around restaurants. However, in common with other pesticides, they should not be used in ways which result in contamination of food, drinks, food preparation surfaces, food containers or dishes and utensils.

For pests invading from outside, recommendations might include locating and treating ant nests. If rubbish bins are being used as an insect food source, they can be fan sprayed as necessary, paying particular attention to inner and outer surfaces around the openings. Perimeter sprays on foundation plantings and around the foundations, eaves, windows, doorways and vents will control

occasional invaders such as ants, spiders and outdoor-living cockroaches. In addition, it may be necessary to inject weep holes and exterior cracks and crevices around doors, windows, plumbing and air vents (if these are points of insect entry).

For pests which have already entered or been carried into the building, it may be necessary to plan insecticide applications of the following four types:

- Treatment of exposed insects on surfaces with directed contact fan sprays. For exposed flying pests, pyrethrum aerosols can be used.
- Spot treatments of surfaces for residual control of insects which crawl across these surfaces searching for food or water, using fan sprays. Target sites might include wall/floor or wall/ceiling junctions, around doorways, the underside of tables and sinks, around insect accesses to food stores and equipment, and Surfaces around serving lines and dining areas.
- Crack and crevice treatment of shallow harbourages in which cockroaches or other insects may hide, using low pressure pinstream applications to avoid wasteful runoff.
- Deep treatment of wall and ceiling voids, conduits, crawl spaces, hollow legs of tables, behind and under stoves and refrigerators, and other voids where insects may hide, using insecticidal dust. For voids in food machinery and for ceiling voids above food preparation surfaces, pyrethrum aerosols

should be used instead of insecticide dust since dust may later migrate to non-target surfaces during maintenance work.

- Of these four types of application, treatments of cracks and crevices and voids will be most useful for insects such as German cockroaches which hide a lot or avoid light. Even with maximal sealing of cracks, crevices and voids, there will always be some of these hiding places because of the need for vented motor housings, air conditioning ducts and accessible ceiling voids.

No plans should be made to treat very hot surfaces with any residual insecticide because the heat will quickly degrade the product. In such situations, and in very wet situations, insects can be killed with a pyrethrum aerosol or flushed to cooler, drier surrounding places previously treated.

## **5. Staff Co-operation**

While some caulking of pest harbourages can be carried out by the pest management professional, the help of on-site staff is essential to deal with most sanitation and maintenance problems which contribute to pest problems. In addition, staff efforts are helpful in preparing the site for insecticide applications. Such preparation includes ensuring that all food is removed or covered; cleaning work surfaces, shelving, food machinery, floors and drains; and disposing of garbage. Such prior cleaning serves two purposes: it reduces the risks of insecticide deposits being immediately removed by cleaning,

and it forces insects to wander further to find food so that they are more likely to contact surfaces treated with insecticide.

## **6. Implementation of Initial Treatments**

Implementation of all the non-control agent measures takes time, money and changes of attitude. Moreover, non-control agent measures alone seldom, if ever, eliminate established populations of pests such as German cockroaches. To deal quickly with an existing pest problem requires an initial offensive based on the control agent recommendations which have been developed. This offensive is best conducted over a short period of time (a few days at most) with the objective of reaching the entire hidden and exposed pest population within that time and achieving a population crash. It has been found that populations of fast-breeding insects such as German cockroaches are much less likely to recover after such a crash than if the same effort was spread over a longer period. In effect, a thorough treatment leaves no safe place for any surviving insects to hide and breed.

Because this initial treatment will require opening of ceiling voids, dismantling of equipment and other disturbances, it can best be conducted during shutdown periods (such as over a holiday weekend or over a series of nights). Ideally, arrangements will be made for the customer's staff to clean and leave dismantled specified equipment prior to the pest management team's arrival.

In general, both for initial treatments and for follow-up treatments, working at night is preferable. Night treatments allow better access to harbourages and less risk of food contamination or disturbance of people. But equally important is that major pests, such as cockroaches, are most active at night and more likely to encounter insecticide deposits when the deposits are freshest and least degraded by cleaning measures or by the heat, light and humidity of a working kitchen.

To ensure complete treatment of all pest harbourages during the initial treatment it is best to divide the building into treatment zones. Then after making sure the zone is prepared (e.g. covering food or lobster tanks, etc.), every harbourage or potential harbourage in that zone is treated before going to the adjacent zone. The size of these zones may range from a whole wall, or even a whole room, to just a four foot wide section of wall. The zone size does not matter.. All that matters is that, if pest eradication is the goal, every harbourage is systematically treated using either crack and crevice, void or surface applications, whichever are most appropriate.

## **7. Implementation of Follow-up Treatments**

Follow-up inspections should be made of any previously infested harbourages, as well as nest sites of ants; where activity persists, they should be re-treated within four weeks of the initial treatment. In

addition, in a complex building where there is a high risk of having missed some harbourages, it is good practice to study the distribution of dead insects on the first morning after a treatment, before the cleaning staff has swept up the bodies. With modern products, a heavy kill is obtained by the next morning and, if concentrations of dead bodies appear in areas that were only superficially treated, this indicates a nearby infested crevice or void which should be indentified and injected with the appropriate formulation.

Where occasional invaders are likely to periodically invade the building, periodic follow-up treatments will be necessary to minimize entry. Depending on the weather and pest pressure, these treatments can usually be scheduled at monthly or bimonthly intervals. Similar protective treated zones of insecticide should be maintained in goods receiving and storage areas to ensure that any pests introduced in provisions do not become established in these areas or spread to new areas.

## **8. Monitoring the Results**

The results of the initial treatment and follow-up treatments should be monitored by regular inspections and by obtaining a regular feedback from on-site staff. The staff should be asked to record the time, place and type of pest sighting in a log book. This will not only help the pest management professional to find new problems, but will also help maintain the interest and involvement of the staff.

Sticky traps can be routinely used or monitoring pests in areas not accessible to the general public. In addition, inspections using pyrethrum aerosols to inject potential harbourages should be carried out at least monthly. Other means of checking for the reappearance of pests include checking catch trays of light traps, or simply looking for insects in regular light fittings. The presence of spiders is further evidence of the presence of insects, since spiders need insect prey. Often the type of insects can be determined by examining the spider's catch in a web.