



# FLIES

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**T**here are many different kinds of flies that specialize in particular food sources such as rotting fruit, dead animals and earthworms. This document covers Integrated Pest Management (IPM) techniques for control of flies.

## FACTS ABOUT FLIES

### HAZARDS OF FLIES

Flies are considered a nuisance by most people but they can also spread **diarrheal illnesses**. They have a hairy body and sticky foot pads that can easily **carry germs and bacteria** from contaminated sites to clean sites and food.

### BENEFITS OF FLIES

Not all species of flies are pests. Many are beneficial: some are predators on pest insects and others are pollinators.

### FLY FOOD AND WATER

Flies are attracted to **moist organic material**. Different species of flies are attracted to different food sources and thus to different baits. Some are attracted to meat scraps, some to ripe fruit or molasses, and some to yeast or milk products. They can only digest food in a liquid state so they have to dissolve solids in saliva or regurgitated stomach acids.

### ATTRACTIVE RESTING LOCATIONS

Flies rest periodically on walls and ceilings near their food source. They are attracted to natural daylight, the presence of other living flies, and the smells of fly specks left on nearby walls and ceilings, as well as particular food smells. Flies lay their eggs in their food source.

## CONTENTS

**FACTS .....1**

**HOW FLIES ENTER SCHOOL BUILDINGS .....2**

**THE KEY TO CONTROLLING FLIES.....2**

**FLY CONTROL TECHNIQUES FOR SCHOOL PERSONNEL .....3**

## THE FLY LIFE CYCLE

There are four stages in a very short life cycle. First, up to **150 eggs** are laid in a moist food environment (usually garbage, compost or manure). Eggs hatch in about a day. **Larva** feed on the food source for 5 days to two weeks, then crawl away and look for a dry place to pupate. The **pupae** molt and become **adults** several weeks to a month later. Adults live for about a month and produce 500 to 2,000 eggs in their life.

The warmer it is, the faster flies will hatch and grow. In a warm, moist site the whole cycle of egg to adult can take a week! An average garbage can is capable of producing over 1,000 new flies a week.

## HOW FLIES ENTER SCHOOL BUILDINGS

Flies usually breed in garbage, compost or manure. Soil contaminated with garbage is often a source. They may be hatching from a dead bird or rodent somewhere in or near the building. Attracted by odors, flies usually enter a building through open doors and windows near garbage and food. They may be attracted from great distances off-site, so it is useless to attempt to kill all of the flies in the school area.

## THE KEY TO CONTROLLING FLIES

The keys to successful control of flies are:

- removal of their food sources and breeding sites,
- exclusion from school buildings, and
- a fly swatter for the occasional fly that gets indoors.

# METHODS IN INTEGRATED PEST MANAGEMENT: FLY CONTROL

## TECHNIQUES FOR SCHOOL PERSONNEL

### IDENTIFY THE PROBLEM

Identify the species of fly and find its food and breeding sites.

Different species of flies have adapted to live in different environments. In order to eliminate a fly problem, you need to prevent them from breeding. Professional help with fly identification may be necessary if you are unable to find the fly's food source and breeding sites. Identification may require capturing a specimen(s) and taking it to an extension agent or pest control professional.

<b>COMMON FLY SPECIES:</b>	<b>THEIR MOST LIKELY LOCATIONS:</b>
<b>HOUSE FLIES</b>	Food and animal feces in dumpsters, garbage, and compost piles.
<b>FLESH FLIES</b>	Animal feces, dead animals and meat scraps.
<b>BLOW FLIES</b>	Dead animals, meat scraps and wet garbage.
<b>CLUSTER FLIES</b>	Lays eggs in earthworms in the lawn. These flies enter buildings to over-winter.
<b>FRUIT FLIES</b>	Decomposing fruit, but will breed in fermenting beer, vegetables, mops, rags, drains, pet food, and condensation or leaks from appliances.
<b>PHORID FLIES</b>	Decomposing plants and animals such as <b>buried</b> animals, garbage, or broken underground sewer lines.
<b>MOTH AND DRAIN FLIES</b>	Gelatinous material found in sink drains, traps and sewers. Also decomposing foods that are becoming liquefied.
<b>FUNGUS GNATS</b>	Fungus on decaying vegetation found in moist soil in flower pots. Also found in pigeon droppings.
<b>MIDGES</b>	Water, especially still water.

Soil where garbage leaks or garbage cans are rinsed, and mops and cleaning rags can be a problem too.

### **Find the places where flies are entering the school.**

This is especially important if the breeding sites are off school property and out of the school's control.

## **✂ HABITAT ALTERATIONS CAN MAKE YOUR SCHOOL UNATTRACTIVE TO FLIES**

### **Clean up food sources and breeding sites**

This step alone dramatically cuts the population. Flies will still come in from the neighborhood, but will not fly further than necessary to find food and a breeding site. This prevents future populations from getting started.

Flies feed on debris found in drains and sinks, garbage and recycling areas, dumpsters and compost piles. These areas also provide a great breeding ground. These sanitation steps remove access to food which discourage the existing population of flies from staying and reproducing.

- Thoroughly clean floors, counters, under appliances and kitchen and bathroom cabinets.
  
- Wash fly specks off the walls and ceilings with a borax and water solution. This removes the scent that flies leave to attract other flies to an area.
  
- Sweep up crumbs and pet food debris.
  
- Clean grease vents and drains with a bottle brush and hot water frequently to eliminate breeding sites for drain flies.
  
- Drain liquids and bag all food wastes, especially milk products, before they go into the dumpster.
  
- Drain and rinse cans and bottles before recycling them.
  
- Clean up spills immediately.
  
- Store all food in glass containers with a rubber gasket or in plastic containers with a snap on lid.

## **Fly-proof all entrances to the building**

One important method of reducing pests is to block their way into the building. Discourage students and staff from propping open exterior doors.

- ☑ Screen windows and vents. Screen kitchen doors if they are left open.
  
- ☑ Caulk around the edges of all screens.
  
- ☑ Install springs on exterior doors so they close automatically.

## **Keep waste collection areas away from doors**

- ☑ Locate exterior garbage cans, dumpsters and recycling areas downwind and away from the doors to the school. This reduces the number of flies that can enter the kitchen or cafeterias from the outside.
  
- ☑ Always keep the lids closed on garbage cans and dumpsters unless you are putting garbage in.

## **HOW TO KILL AND REMOVE ADULT FLIES**

Habitat alterations, like the those listed above, will prevent new generations from reproducing in the school and will help to keep individual flies out of the building. There are several non-toxic or low-toxic methods to get rid of individual flies that have already made their way into the building.

### **Methods that are non-toxic, inexpensive, very effective, and show measurable results**

#### **Fly swatters**

Fly swatters are completely non-toxic and provide instant measurable results.

#### **Non-insecticidal flypapers**

Some flypapers contain **pheromones**, scent hormones that attract insects to each other. Flypapers without pheromones also work because the flies are attracted to the light color and the vertical placement on a surface. Both types of flypaper trap flies in the paper's adhesive.

Since they attract flies, do not use flypaper near open doors or windows. Some flypapers can be used in kitchens and around food and some cannot - check the product label.

They are “unsightly” due to the dead insects stuck on the surface.

## **Methods that are non-toxic and effective, but more expensive**

### **Outdoor traps**

Use cone-type insect traps over a bait dish to catch flies outdoors. A moist bait is needed to attract flies into the trap. A mixture of cornmeal and molasses is effective although it can attract other pests. Flies leaving the bait fly upward toward the sunlight and have to fly through a small hole at the top of the cone that leads to a container. Once they are in the container, they keep trying to go up toward the light and will not go down to leave from the entrance. The bait must be kept moist and dead flies should be removed periodically.

Keep insect traps away from doorways where they would attract more flies into the building. This is the best way to reduce outside population numbers while your exclusion and clean up efforts are underway.

### **Indoor electric light traps**

Otherwise known as “bug lights” or “bug zappers,” these devices work well only if there is no competing source of natural light, like a window or glass door. They can usually be used in food preparation areas. Flies are only active in daylight and are not very attracted to artificial light. Used outdoors at night they would be useless for fly control and will attract and kill large numbers of beneficial insects.

## **Methods too toxic for use in a school although they are effective:**

### **Insecticidal insect sprays and pest strips**

Poison sprays contain registered pesticides that can be hazardous to individuals in the classrooms. Some are not designed to be used in enclosed spaces inhabited by people. They release vapors that remain in the environment for prolonged periods - long after the fly is dead - and do not prevent flies from entering the school.

## **Methods that are expensive but are not effective or are impractical:**

### **Ultrasonic Devices**

Devices that emit sound beyond the human range of hearing are advertised as a way to repel a variety of insects or animals. In 1984 the Federal Trade Commission studied them and determined **they do not work.**

**Predatory and parasitoid beneficial insects or organisms**

Fly-eating insects and parasites that use fly larvae as a host are available to commercial buyers. They work well when released in areas with large accumulations of larvae in manure, such as stables, feedlots and kennels. They should not be used inside school buildings and would be useless on school grounds.



## PUBLICATIONS

On this fact sheet, staff working on the Integrated Pest Management in Schools Project have created eight other documents that describe the least toxic methods for controlling pests in a school setting. Call (360) 407-7472 to request any of the documents listed below:

<b><u>Number</u></b>	<b><u>Title</u></b>
	<i>Integrated Pest Management in Schools Project: Carpenter Ants</i>
	<i>Integrated Pest Management in Schools Project: Fleas</i>
	<i>Integrated Pest Management in Schools Project: Head Lice</i>
	<i>Integrated Pest Management in Schools Project: Cockroaches</i>
	<i>Integrated Pest Management in Schools Project: Rodents</i>
	<i>Integrated Pest Management in Schools Project: Termites</i>
	<i>Integrated Pest Management in Schools Project: Yellowjackets and other Wasps</i>
	<i>Integrated Pest Management in Schools Project: Nuisance Ants</i>

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