

Pesticide Drift

At a Glance

- **If people are ill and it is an emergency, call 911.**
- If you believe that drift has occurred and has harmed people, plants, or the environment, call your County Agricultural Commissioner, who will look into your complaint. The number is on the inside back cover of this booklet. You can also get the number by calling DPR's complaint information line, 1-87PestLine (1-877-378-5463).
- Drift can be noticeable as a cloud of pesticide spray or dust, or can be invisible and odorless.
- If you believe you have been exposed to spray drift and have health-related questions, you should contact the doctor or the Poison Control Center, 1-800-222-1222.

We expect pesticides, when applied, to reach a specific target and remain there. That is the goal of all pesticide applications. Application equipment is built for that purpose. It's the focus of applicator training. When a pesticide product goes where it is not needed or wanted, it may endanger the safety and health of people, injure desirable plants and animals, and affect environmental quality.

Scientists recognize that almost every pesticide application produces some amount of drift off the target area. Not all drift may be harmful or illegal. How much a chemical may drift and whether it is harmful depends on such factors as the formulation of the product, the amount used, the application method, the weather, and – most critically – decisions by the applicator.



If pesticide drift is making people sick, call 911 right away.



Drift can occur from residential and household pesticide applications, too. It can even happen indoors.

Because some drift can occur with any application (and may be in amounts too small to affect people or property), the laws focus on preventing substantial drift.

What is pesticide drift?

Drift is the movement of a pesticide through the air away from the intended target. This drift can be in the form of mist, particles, or vapor (gas). It isn't limited to agricultural activities. Drift can occur when a neighbor sprays pesticides in his garden. It can even occur indoors. Air currents created by heating, cooling, and ventilation systems can pick up and spread pesticides you use in your house.

Pesticide drift was originally thought to occur only when applications were not done properly, and pesticide drifted away from the target, harming people or property. Laws and regulations governing pesticide application were written with this kind of illegal, harmful drift in mind.

As we learned more about how chemicals move through air, we found out that pesticides could drift whether or not those using the pesticides are following the rules. As now used, "drift" refers to any off-site movement of a pesticide – not just to illegal applications. Off-site movement often depends on factors like weather, the application site, or the pesticide used. It can happen when traces of pesticide from one or several legal applications accumulate and remain in the surrounding air. The residues in air are usually (but not always) below the level of health concern.

Measuring and evaluating this kind of low-level off-site movement requires scientific monitoring and study, which we at DPR do in collaboration with Cal/EPA's Air Resources Board and the Office of Environmental Health Hazard Assessment. If we find that drift is harming health, we review the pesticide rules and change them as necessary to protect people. County Agricultural Commissioners enforce these rules.

When does drift occur?

Drift isn't limited to the period during or immediately after an application. It can occur hours or even days later. For ease of explanation in this booklet, we will divide drift into two categories: spray drift, and post-application drift.

“Spray drift” describes drift that occurs during or shortly after the pesticide is applied. It often occurs when wind or application equipment blows the pesticide off the intended site. Spray drift can be in the form of liquid droplets, dust particles (if the pesticide was applied as a dust), or vapor. Vapor can be formed as a liquid or oil dries, or it can be drift of a pesticide that is already a gas (such as a fumigant).

“Post-application drift” occurs after an application is completed. Post-application drift may be the result of an illegal application; for example, an applicator may neglect to follow fumigant application rules. (Fumigant pesticides can escape quickly from application sites and cause problems, resulting in illegal drift.)

On the other hand, post-application drift may also occur with correct applications. Days or even weeks after application, pesticides can evaporate (“volatilize”) into a gas. Low levels of pesticides may be carried long distances by air currents.

Vapor drift from a legal pesticide application is sometimes difficult to predict. It depends on factors like what the weather will be even days after the application. Also, some pesticides evaporate more easily than others, as do some different formulations of the same pesticide.

Why is some drift unavoidable?

The air that surrounds this planet carries vapors and particles long distances. Rain clouds, for example, move with the wind over long distances. Think about how you can smell the disinfectant in your bathroom long after you've cleaned. The same thing happens with pesticides; some amount will drift off target, even though the amount may be very small.

Because pesticides can drift, applicators are legally required to take all possible measures to make sure that any off-site



Although some pesticide may move off target in any application, applicators can and must prevent harmful drift.

movement does not reach a level that could harm people or the environment. They must:

- Exercise a high degree of professionalism in making decisions about applications.
- Ensure their equipment and techniques produce a minimum of drift that is below potentially harmful levels.
- Make sure they don't apply pesticides when conditions exist that make drift more likely, for example, when it is too windy.

Are some pesticides more likely to drift?

Yes. Fumigants are gaseous pesticides used to treat homes, storage bins, and soil before planting. Applicators inject them into soil or release them into buildings. Because they are gases, fumigants move easily through soil and air, and will drift away from where they are applied unless they are confined. Various techniques are used. For example, applicators cover buildings with tarps and seal the edges, to keep the fumigant in the structure. In fields, tarps are placed over the soil to minimize leakage. Over time, the gas slowly releases into the air. Application rules focus on ensuring that the fumigant dissipates slowly so it doesn't build up to harmful levels.

Because they are gases, fumigants are especially volatile. This means they are more likely to drift than other pesticides. Fumigant drift can be a problem during or immediately after application, or days later, particularly if applicators do not pay careful attention to the rules governing fumigant use. That is why fumigants are a major focus of DPR's drift reduction efforts.

Is all drift illegal?

No. Some off-site movement occurs with every application, even if only a few molecules. But to protect people and the environment from harm, California has strict standards concerning drift and many rules limiting applications to minimize drift. Additionally, County Agricultural Commissioners direct significant enforcement activity toward preventing harmful spray drift.



Because they are gaseous pesticides, fumigants are more volatile and special precautions must be taken to prevent harmful drift, such as these tarps placed over fumigated soil.

Pesticide laws focus on spray drift that causes harm, or has the potential to do so. The law specifically recognizes that pesticides may drift but says that “substantial” drift is not allowed. The law prohibits applications if there is a reasonable possibility of harm to people or property.

Enforcement specialists from the County Agricultural Commissioner’s office look at the facts and circumstances of each incident. If an applicator did not follow the rules, he or she could face fines and other penalties.

Sometimes DPR finds that drift from legal applications poses an unacceptable risk. This kind of drift is not related to whether the application was done correctly but to such things as the chemical properties of the product used, the amount used in an area, and the weather. When we learn about post-application problems resulting from legal uses, we look for the causes of the problem. We then change the rules, as necessary, to keep harmful residues out of the air.

What responsibility do applicators have to prevent drift?

People who are applying pesticides have the primary responsibility for drift management. They must take all reasonable precautions to prevent harmful drift. Spray drift can be illegal if the applicator did not follow the instructions on the label or other requirements, or if the drift causes harm to humans and property, or has the potential to do so.

Preventing harmful exposure to people or property requires that applicators, before using pesticides, evaluate:

- Their equipment.
- The weather.
- The site to be treated.
- The surrounding area to decide the likelihood of harm or damage.

After their evaluation, applicators must use available practices to reduce drift that might otherwise occur.

Applicators:

- Must not make an application likely to result in harmful drift.



To prevent harmful drift, applicators must evaluate their equipment, the surrounding area, weather conditions, and anything else that may cause problems.

What are the roles of the Department of Pesticide Regulation and County Agricultural Commissioners regarding drift?

It depends on when the drift occurs in relation to the application, and whether the drift was illegal.

County Agricultural Commissioners:

- Enforce the rules designed to prevent harmful drift.
- Investigate pesticide complaints and take enforcement actions when violations are found.
- Put extra controls on certain pesticides when needed to prevent problems (depending on local conditions; for example, to protect area schools or endangered species habitats).

We at DPR set statewide standards and rules on pesticide use. We also monitor and conduct scientific studies to identify and prevent potentially harmful levels of pesticides in air. When we find problems, we develop additional rules on applications.

- Must not proceed with any action likely to result in the reasonable possibility of contaminating people or interfering with use of neighboring property.

Applicators who do not follow the rules (for example, instructions on the pesticide label or other requirements) will be in violation and may be penalized. Also, if their judgment during an application results in injuries to people, damage to property, or unintended harm to the environment, they will be found in violation and penalized.

What is being done to prevent post-application drift?

Some drift into surrounding air is expected with all pesticide applications. Our job is to make sure that legal applications don't result in pesticide levels in ambient air that pose a risk to health or the environment. If the rules aren't doing that, we change them.

Along with the Air Resources Board, we study pesticides in air next to application sites, as well as in rural communities and cities near agricultural operations. If the studies show that pesticide traces from legal applications accumulate to levels that can harm human health or the environment, we impose extra controls to avoid this harm.

For example, after doing air monitoring, we found that applications of fumigants and certain herbicides could lead to unacceptable post-application drift. Among other changes, we added statewide restrictions on the amount of pesticide that can be applied and acreage that can be treated. We also worked with the County Agricultural Commissioners to develop restrictions that would protect public health while allowing use under specific local conditions.

Application of some pesticides also contributes to the formation of smog, so, along with the Air Resources Board, we are putting controls into place that reduce the contribution of pesticide products to smog.