



Forum: United Nations Environment Assembly of the United Nations Environment Programme

Issue: The Question of Pesticide Drift

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INTRODUCTION

Pesticides are widely used in agricultural production to prevent or control pests, diseases, weeds, and other plant pathogens and thus can improve yield as well as quality of the produce, even in terms of cosmetic appeal, which is often important to consumers. Pesticides can also improve the nutritional value of food and sometimes its safety. There are also many other kinds of benefits that may be attributed to pesticides, but these benefits often go unnoticed by the general public. Thus, from this point of view, pesticides can be considered as an economic, labour-saving, and efficient tool of pest management with great popularity in most sectors of the agricultural production. Despite their popularity and extensive use, there has been an evident problem of pesticide drift, which poses many risks to people and the environment, even though spray pesticides are now labelled and 28 states have drift spray regulations on their books, pesticide drift continues to be a problem wherever crops are grown.

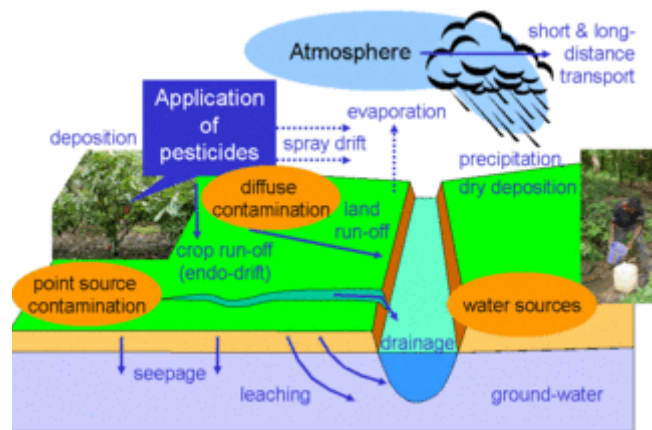
DEFINITION OF KEY TERMS

Herbicides: also commonly known as weed killers, are chemical substances used to control unwanted plants. Selective herbicides control specific weed species, while leaving the desired crop relatively unharmed, while non-selective herbicides (sometimes called "total weed killers" in commercial products) can be used to clear waste ground, industrial and construction sites, railways and railway embankments as they kill all plant material with which they come into contact.

Vapour: a gas phase of lower temperature than its critical temperature, which means a pressure increase can still condense the gas to liquid even without a temperature reduction. A vapour is different from an aerosol. An aerosol is a suspension of tiny particles of liquid, solid, or both within a gas.

Pesticide residue: refers to the pesticides that may remain on or in food after they are applied to food crops. The maximum allowable levels of these residues in foods are often stipulated by regulatory bodies in many countries.

Crop: any cultivated plant, fungus, or alga that is harvested for food, clothing, livestock, fodder, biofuel, medicine, or other uses. In contrast, animals that are raised by humans are called livestock, except those that are kept as pets.



BACKGROUND INFORMATION

Pesticide drift is the airborne movement of pesticides from an area of application to any unintended site. Drift can happen during pesticide application, when droplets or dust travel away from the target site. This is called particle or spray drift and it is what most people think about when they hear the phrase “pesticide drift”. It can also happen after the application, when some chemicals become vapours that can move off-site even when the pesticide was applied as a solid or liquid and it can take place over the course of many days. This is another common kind of drift that is also dangerous, but largely ignored and it is called vapour or volatilization drift.

Pesticide drift is all too common in places where agricultural fields and residential neighbourhoods intersect. Even the most careful, responsible pesticide sprayer cannot control what happens to pesticide droplets once they are released from a plane or tractor. Too often, these droplets end up settling in someone’s yard, mixing with dust in someone’s house, landing on another farmer’s crops, or coating the skin of someone who happens to be at the wrong place at the wrong time. There are many factors which interact to determine whether a pesticide will drift or not, and the extent of that drift. Factors influencing pesticide spray drift are: wind speed and direction, pesticide formulation type, calibration and maintenance of application equipment, spray droplet size, temperature and humidity, atmospheric stability, temperature inversions, accuracy of weather forecasting, crop height and type, farm management (i.e. buffer zones), local geography, skill of the pesticide applicator.

Pesticide drift can pose health risks when sprays and dusts drift, which most toxic pesticides are prone to do, to nearby areas such as homes, schools, fields and playgrounds putting families, pets, farmworkers and sensitive crops in danger. Around the country, officials routinely investigate cases of crop damage in which a grower's crops are harmed or even ruined because a crop duster sprayed when winds were high, or when pesticide mist drifted in from a neighbouring farm. Herbicide drift can also damage other nearby crops or make them unsellable if the active ingredient is not registered for a particular crop.

Human exposure to pesticides can occur as a result of inhalation, skin absorption and ingestion of pesticides. Pesticide exposure can cause serious short-term (acute) health effects as well as long-term (chronic) health problems. Acute short-term health symptoms can occur a few minutes to a few days after being exposed to pesticides. It is important to report poisonings to your doctor so you can be properly treated and the incident can be reported. Symptoms include: Eye, nose or throat irritation, difficulty breathing, skin irritation, rash, headaches, muscle weakness... Chronic long-term health problems can result from both a single high-dose exposure to pesticides and from exposures over a long period of time, even when exposure levels are low. Even though people may not know they have been exposed, health problems can emerge years after a serious poisoning incident or from low-level, long-term exposure. Symptoms include: brain cancer and other cancers, birth defects, Parkinson's disease and dementias, leukaemia, etc.

The health harms of breathing these pesticides, called inhalation exposure, is however often overlooked or underestimated by government officials. And drift does not need to settle directly on people to do damage. Children can be exposed to health-harming pesticides when playing in a field or on a playground that has been drifted on days or weeks previously.

Wildlife and plants are also at risk when drift affects natural areas and water sources. Research examining inland rivers has shown that pesticide levels sometimes exceed environmental guidelines for the protection of aquatic ecosystems with concentrations at highest levels downstream. If you live in an area where pesticides are used and you collect your drinking water, the water is likely to contain pesticide residues as well. Pesticide drift also results in wasted pesticide product. EPA estimates up to 70 million pounds of pesticides are lost to drift each year.

Organic growers are particularly at risk. They face the real possibility of not only being unable to sell their damaged crops, but also of losing their organic certification. This is a tremendous financial loss, as recertification requires three years of organic production during which their crops can't be sold as organic.

MAJOR PLAYERS INVOLVED

China

The number one consumer of pesticides is China, where 3,981,548,455 pounds are applied every year. China was one of the first nations to begin using pesticides, copying US practices, and relies on its application for rice crops in particular. Experts suggest that its current use surpasses safe levels and is contributing to environmental pollution and human health problems. The country practices year-round planting and harvesting which has increased pesticide use which has led to soil contamination. The contaminated soil must be treated with increased fertilizers which creates a never-ending cycle of agricultural additives. Excessive use of pesticides here leads to runoff into waterways. When lakes or rivers have high levels of pesticides, excessive numbers of plants can take over. These plants consume the majority of oxygen available thereby killing off the fish life.

United States

The United States is the next largest consumer of pesticides, applying 850,984,332 pounds annually. Pesticides are so common in this country that even household apply them to lawns and municipalities use them for parks. One study found that every waterway is contaminated with some form of the chemical and approximately 90% of wells sourced by groundwater contain pesticides as well. Pesticide residues on food lead to between 4,000 and 20,000 new cases of cancer every year. The contamination results in anywhere from 6 million to 14 million fish deaths and 67 million bird deaths. Other animal life, especially amphibians, have suffered birth deformities due to nerve damage which also results in population declines.

Other countries with high levels of pesticide use are also: Argentina, Thailand, Brazil, Italy, France, Canada, Japan and India.



POSSIBLE SOLUTIONS

It is always very useful to form a collaboration with experts at universities, industries, state and international partners to examine new studies and improve scientific models and methods for estimating pesticide drift, potential exposure, and risks from drift. Evaluating the potential for each pesticide to drift is of great importance and also strengthening the labels, because reading the label is the first and most important way to minimize risk and exposure. Understanding the approved use instructions will help reduce the risk of drift. A significant step is also to improve the clarity and enforceability of product label directions and drift management restrictions, as well as promoting applicator education and training programs.

USEFUL LINKS

- <https://www.epa.gov/reducing-pesticide-drift/introduction-pesticide-drift>
- <http://npic.orst.edu/reg/drift.html>
- <http://www.panna.org/our-campaigns/stop-drift>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3108117/>
- <http://www.ntn.org.au/wp/wp-content/uploads/2012/04/NTN-SPRAYDRIFT-A5-Lo-res.pdf>
- <https://www.scientificamerican.com/article/pesticide-drift/>
- <http://www.cdpr.ca.gov/docs/dept/factshts/epadoc.htm>
- <http://www.pesticides.montana.edu/reference/drift.html>