

## FOR LANDSCAPING PROFESSIONALS

Program on Breast Cancer and Environmental Risk Factors (BCERF) • <http://envirocancer.cornell.edu> • 607 254-2893

# Understanding the cancer risk of turf and lawn care pesticides

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**At BCERF**, we aim to improve knowledge and understanding among professional pesticide applicators about the cancer risks posed by some commonly used turf and ornamental pesticides. We seek to improve workplace risk communication and training, and reduce risk among pesticide applicators and the clients and communities they serve. In this *BCERF Brief*, we provide information for pesticide applicators on understanding the cancer risk of turf and lawn care pesticides, how to find health risk information, and how to better communicate with others to reduce health risks.

**Our research seeks to gain a better understanding** of attitudes and perceptions about pesticides, variations in workplace safety culture, and the potential risks posed by some pesticides.

We wanted to understand what pesticide applicators know about cancer risk and their views on pesticide exposure. We asked applicators the ways in which they seek out health information, and how they would prefer to receive new health information and training. Understanding attitudes and perceptions is an important first step towards improving safety communication and reducing risk.

**In our work with pesticide applicators**, we discovered that there is strong interest and need among turf and lawn care professionals to better understand the potential cancer risk posed by some active ingredients in commonly used pesticide products. We used a survey to collect feedback from over 1,200 New York State (NYS)-certified applicators and technicians on an array of topics related to work, pesticides, and health.

**Applicators we surveyed** reported that pesticide safety is a high priority in most of their turf, landscaping, golf and other green industry workplaces. Managers are prioritizing the use of lower risk products, workers are taking responsibility for their own safety, and minimizing pesticide use is being emphasized. There is also strong concern among many workers about the potential health risks posed by some pesticide products. Half of the applicators we surveyed worry about developing disease, such as cancer, as a result of their pesticide exposure. There is strong interest among turf and lawn care applicators in learning more about the potential health risks, including cancer risk, associated with some pesticides.



## Making sense of cancer risk

Hereditary factors account for only a small portion (10-20%) of cancer cases each year. The vast majority of cases can be attributed to environmental factors, such as dietary (e.g., alcohol intake) and lifestyle factors, such as occupational chemical exposures or smoking. Studies of gene-environment interactions show that some individuals and families are more susceptible to developing cancer than others. In addition, some cancers may take 30 years or more to develop.

In order to assess the potential cancer risk posed by a chemical, scientists must evaluate the results of dozens of studies before a cancer risk categorization can be made. Studies done in laboratory animals, as well as studies of human populations, cell cultures, and other methods are each important sources of scientific information used in cancer risk assessments. Risk assessments using all of this information are used to determine the extent to which a chemical may pose a risk to human health. Not all man-made chemicals hold the potential to cause cancer in humans, but some do. In many cases, we do not have definitive scientific information on whether a chemical will cause cancer or not. In these cases, chemicals may be categorized using words such as 'Possible' or 'Probable' human carcinogen (see box on back page *EPA Cancer Classifications*).

## Pesticide registration, labeling, and cancer risk

Risk is the chance of harmful effects to human health from exposure to a hazardous chemical (or other harmful stressor). Risk is a function of both the *hazard* and the probability of *exposure*. The US Environmental Protection Agency (EPA) works to minimize the potential risks to human health posed by pesticide active ingredients by developing regulations and guidelines that help to reduce exposures. Formulation, application rates, type of use (e.g., general vs. restricted), and other factors are taken into account to decrease exposure. Applicators must follow the pesticide label's application specifications as well as requirements to use personal protective equipment. These requirements are based not only on what is best to control pests. They are also based on what levels of pesticide active ingredient are predicted to not be harmful to human health based on the scientific information available at the time the pesticide was registered.

Since scientific methods for understanding health risks are constantly evolving, product label requirements can change periodically as well. Some pesticides used today were first reviewed several decades ago using older scientific methods. These chemicals are now being re-evaluated by the EPA. Pesticide product labels are required by law to provide health risk information on

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short term, or acute, health effects, such as eye or skin irritation. Current federal labeling law does not require information on the product labels on chronic health effects such as cancer, reproductive, neurological, or other risks to long-term health. Therefore, it is important to read the label and also seek out additional health risk information on the pesticides and other chemicals you use.

## Finding cancer risk information on the pesticides you use

Pesticide product labeling and Material Safety Data Sheets (MSDS) are important sources of pesticide safety information, but do not provide complete health and safety information. The sources listed below provide health and safety information beyond what is included in pesticide product labels or MSDS.

### BEYOND THE LABEL:

#### Sources of pesticide health and safety information

##### Cornell Cooperative Extension Pesticide Safety Education

**Program:** <http://psep.cce.cornell.edu/facts-slides-self/Factsheets.aspx>

##### Cornell University Turf Pesticides and Cancer Risk Database:

<http://envirocancer.cornell.edu/turf>

##### EXTOXNET Pesticide Information Profiles:

<http://extoxnet.orst.edu/pips/ghindex.html>

**National Pesticide Information Center:** <http://npic.orst.edu>

**Pesticide Action Network:** <http://www.pesticideinfo.org>

*Cornell University's Turf Pesticides and Cancer Risk Database* is an easy-to-use, searchable online database that provides cancer risk information for chemicals found in over 3,000 turf and lawn care pesticide products registered for use in NYS. The database is accessible at: <http://envirocancer.cornell.edu/turf>. The database integrates information on a limited number of chemicals that have been evaluated for carcinogenicity by the EPA with over 100 pesticide active ingredients found in turf, lawn, and ornamental pesticide products. Users can search for information three ways: (1) by product name, (2) by active ingredient, or (3) by cancer risk category (EPA's Cancer Classification). The database provides

### EPA Cancer Classifications for pesticide active ingredients in currently-registered turf and ornamental pesticide products in New York State

EPA Cancer Classification	Active Ingredients	Products*
Known human carcinogen	0	0
Likely/Probable human carcinogen	19	252
Possible human carcinogen/ Suggestive evidence	29	585
Not likely/Evidence of non-carcinogenicity	46	412
Not classifiable/Inadequate information	16	243
Multiple descriptors	2	12

\*Includes products that are discontinued and scheduled for cancellation in NYS as of December 12, 2008.

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both product- and active-ingredient-specific information as well as information on pesticide regulation and cancer risk assessment. Downloadable PDFs are available with additional chemical-specific risk information.

Cancer risk information is not yet available for approximately two-thirds of the active ingredients found in turf and ornamental pesticide products due to historic cancer risk testing priorities. Recent federal regulatory decisions now mandate cancer risk evaluations to be completed for all pesticide active ingredients, but implementation of this testing will take many years.

### REDUCING RISK: Things you can do

*There are a number of ways that turf and lawn care professionals can reduce the risks posed by turf and lawn care pesticides.*

- **Integrated Pest Management (IPM)** techniques should be used as a first step towards reducing, minimizing, or possibly eliminating the need for pesticides. The use of IPM has become the norm for pest management in many areas around NYS. IPM techniques not only reduce risk, but are often more cost effective than using traditional pesticides for pest control. Information on IPM for lawn and landscaping can be found at: <http://nysipm.cornell.edu/landscapes>.
- **Choose organic products**, which are now being used in lieu of traditional synthetic pesticide products in many applications with success.
- **Seek out health risk information** on the active ingredients found in the pesticide products you are considering using and determine whether alternative, less risky products may be used instead.
- If synthetic pesticides are to be used, applicators should always take the time to **read the label and use the product only as directed**. Instructions for using personal protective equipment should be followed or exceeded, and common hygienic practices such as hand washing, laundering of soiled work clothes, and bathing should be followed closely.

## Improving communication with your co-workers, clients, and community

Communicate with your co-workers, clients, and the community you serve. Over half of the applicators we surveyed reported discussing pesticide exposure or safety issues with their supervisors or managers less than once a month, with nearly 20% reporting that they never discuss such issues. Similar results were found with regard to discussing pesticide exposure or safety with co-workers, clients and customers, friends and family, and doctors and health care providers. While a majority of applicators surveyed reported that talking with clients and the public is part of their job, less than half reported receiving training in how to do so. Our research shows that the great majority of applicators want to learn more about the health risks, such as cancer, posed by the pesticides they use and that they would most like to receive this information online or through their certification and training courses. Increasing health and safety communication and training should continue to be important priorities for workers and pesticide safety educators alike.