

# PESTICIDE STANDARD WRITTEN NOTIFICATION

## FOR SCHOOLS, DAY CARE PROGRAMS, AND SCHOOL-AGE CHILDCARE PROGRAMS

- The school, day care center, and/or school-age childcare program is responsible for sending this standard written notification form to employees, pupils, parents etc. to insure that they receive this information at least 2 working days prior to any pesticide use.
- It is recommended that the Pest Management Professional use this ready-to-copy standard written notification form for the purpose of providing pesticide use information to the school, day care center, and/or school-age childcare program. The Pest Management Professional should save this form for copying.

**School:**

\_\_\_\_\_   
 Name of School , Day care center, and/or School age childcare program

**Pest Management Company:**

(Please Print)

\_\_\_\_\_   
 Name

\_\_\_\_\_   
 Address

**Pest Management Professional:**

(Please Print)

\_\_\_\_\_   
 License number

### A. List the Approximate Dates on which the pesticide use shall commence and conclude

**Beginning Date** \_\_\_\_\_

**Ending Date** \_\_\_\_\_

### B. Record the specific location of the anticipated pesticide use


### C. Pesticide Information (Pest Management Professional should be specific as is possible when listing product(s) to be used)

<b>Pesticide Product Name</b>	<b>Pesticide Type</b>	<b>EPA Registration #</b>	<b>Description/Purpose of treatment and/or application</b>
1.			
2.			
3.			
4.			
5.			

This standard written notification must be accompanied by the following 2 documents. These materials are available from the DAR web page [www.mass.gov/agr](http://www.mass.gov/agr). Follow the links to the Children's Protection page.

- Chemical Specific Fact Sheet(s)
- Consumer Information Bulletin for school, day care center, and/or school-age childcare program.

### Prodiamine In Brief

Prodiamine is an herbicide that works by preventing cells in plants' roots and shoots from dividing. It is low in toxicity to people. It does not dissolve well in water and binds tightly to the soil. It breaks down slowly in soil, but rapidly if exposed to sunlight or if it is in water. Prodiamine is low in toxicity to bees and other beneficial insects but moderately toxic to earthworms. It is toxic to some aquatic animals. The U.S. Environmental Protection Agency (U.S. EPA) considers prodiamine a "possible human carcinogen."

### What is prodiamine?

Prodiamine belongs to a group of human-made **herbicides** called dinitroanilines. Prodiamine is used in non-crop areas, nurseries, golf courses, and residential land.<sup>1</sup> It was first registered for use in 1992.<sup>2</sup> Prodiamine is used to control annual grasses and broadleaf weeds.<sup>3,4</sup> Prodiamine is a selective herbicide that can be used before planting or emergence.<sup>4,5</sup>

### What are some products that contain prodiamine?

There are over 500 pesticide **products** that contain prodiamine.<sup>6</sup> Prodiamine is sometimes used in products with other herbicides. Some products with prodiamine might also contain fertilizers. Prodiamine is used as a dust, emulsifiable concentrate, soluble concentrate, water dispersible granule, dry flowable, flowable concentrate, granular, or ready-to-use product.<sup>6,7</sup>

Prodiamine is not used in organic horticulture.<sup>8</sup>

### How does prodiamine work?

Prodiamine interferes with cell division to stop root and shoot growth.<sup>9</sup>

### How might I be exposed to prodiamine?

You could be exposed to prodiamine while using a product or if you are too close to an application. You could breathe it in, get it on your skin, or get it in your eyes. You could be exposed if you eat or smoke after making an application without washing your hands. Granules could be mistaken for food crumbs by pets or children. Prodiamine is not used on any food crops, so it is not expected to be a residue on food.<sup>7,10</sup> Prodiamine may occur at low concentrations in drinking water.<sup>7</sup>

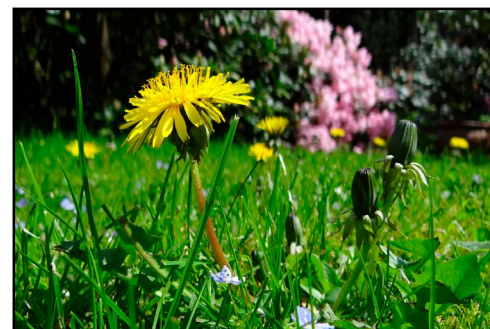


photo credit: Dirk Schumacher, pixabay

**IMPORTANT:** Always **follow label instructions** and take steps to **minimize exposure**. If any exposures occur, follow the First Aid instructions on the product label carefully. For additional treatment advice, contact the Poison Control Center at 800-222-1222. If you wish to **discuss a pesticide problem**, please call NPIC at 800-858-7378.

**Technical Grade Prodiamine:** This fact sheet refers to the technical grade, or "pure" prodiamine only. Products you buy from the store include other ingredients as well. While many of the chemicals used as other ingredients may not pose environmental or health risks, some of them can be toxic. In some cases, the other ingredients can pose greater risks than the active ingredient itself.

### What are some signs and symptoms from a brief exposure to prodiamine?

If **inhaled**, prodiamine is low in toxicity.<sup>7</sup>

- People who have been exposed to enough prodiamine had headaches, dizziness, respiratory irritation, skin irritation, eye irritation, chest pain, coughing, stomach pain, twitching, and nausea.<sup>11</sup>

If **eaten**, prodiamine is very low in toxicity.<sup>7</sup>

- No information was found on symptoms people experienced after being exposed to prodiamine by mouth. People who swallowed another dinitroaniline herbicide called pendimethalin experienced symptoms of nausea, vomiting, and sore throat. More severe cases included seizures, and vomiting blood.<sup>13</sup> As with any pesticide, more exposure may lead to more harm.

When it gets **on the skin**, prodiamine is low in toxicity.<sup>7</sup>

- When researchers tested prodiamine on the skin of laboratory rabbits, it was non-irritating.<sup>3</sup>
- A formulated herbicide product containing prodiamine was found to be a skin sensitizer in guinea pigs.<sup>12</sup>

If prodiamine gets **in your eyes**, it can cause mild eye irritation and redness.<sup>11</sup>

Based on numerous studies and data, it is unlikely that prodiamine is neurotoxic.<sup>7,12</sup> However, in one rat study, rats fed 2000 mg/kg of prodiamine were less alert and had reduced movements 5 hours after exposure.<sup>12</sup>

For more information about how NPIC finds scientific studies, see our page on [Writing NPIC Fact Sheets](#).

### What happens to prodiamine when it enters the body?

When prodiamine enters the body, it is rapidly excreted. After 24 hours, rats eliminated around 70% of the total dose. Most of the prodiamine was detected in the feces. The amount found in tissue 4 days later was 0.5-1.4% of the initial dose.<sup>13</sup>

Researchers gave rats a single dose of either 10 mg/kg or 400 mg/kg prodiamine. They also fed the rats daily with 10 mg/kg prodiamine for 2 weeks. In all cases, the rats had eliminated the prodiamine within 4 days after feeding had stopped. Female rats had higher tissue levels of prodiamine. The residues were found throughout the body. Most of the dose was eliminated in the feces and urine.<sup>7</sup>



photo credit: USDA NRCS Montana, flickr

#### What is a mg/kg?

"Mg/kg" is a way to measure a chemical dose. This can tell us how toxic a chemical is. "Mg" means milligrams of a chemical. "Kg" means one kilogram of an animal's body weight. Something that is highly toxic may kill a person with a very small amount of chemical. If something is very low in toxicity, it may take much more for that same person to become very sick or die. Regardless of how toxic something is, there must be an exposure for there to be harm. For more information, see the [Pesticide Hazard vs. Risk Fact Sheet](#).

There are no studies available on dermal absorption, or how well prodiamine passes through the skin. However, the U.S. EPA used a related chemical to estimate dermal absorption. Based on that, they expect 3% would be absorbed by the skin into the body.<sup>7</sup>

### TOXICITY CLASSIFICATION - PRODIAMINE<sup>7</sup> (see the text box about mg/kg)

	High Toxicity	Moderate Toxicity	Low Toxicity	Very Low Toxicity
Acute Oral LD <sub>50</sub>	≤ 50 mg/kg	> 50 – 500 mg/kg	> 500 – 5000 mg/kg	> 5000 mg/kg
Inhalation LC <sub>50</sub>	≤ 0.05 mg/L	> 0.05 – 0.5 mg/L	> 0.5 – 2.0 mg/L	> 2.0 mg/L
Dermal LD <sub>50</sub>	≤ 200 mg/kg	> 200 - 2000 mg/kg	> 2000 – 5000 mg/kg	> 5000 mg/kg
Primary Eye Irritation	Corrosive (irreversible destruction of ocular tissue) or corneal involvement or irritation persisting for more than 21 days	Corneal involvement or other eye irritation clearing in 8 - 21 days	Corneal involvement or other eye irritation clearing in 7 days or less	Minimal effects clearing in less than 24 hours
Primary Skin Irritation	Corrosive (tissue destruction into the dermis and/or scarring)	Severe irritation at 72 hours (severe erythema or edema)	Moderate irritation at 72 hours (moderate erythema)	Mild or slight irritation at 72 hours (no irritation or erythema)

The shaded boxes reflect the signs and symptoms from a brief exposure discussed in this fact sheet. Modeled after the U.S. Environmental Protection Agency, Office of Pesticide Programs, Label Review Manual, Chapter 7: Precautionary Statements. <https://www.epa.gov/sites/default/files/2018-04/documents/chap-07-mar-2018.pdf>.

You may be wondering why the “High Toxicity” column has smaller numbers than the “Low Toxicity” column. This is because if a smaller amount of the pesticide caused a health effect, it’s more toxic. If it takes a larger amount of the pesticide to cause a health effect, it’s less toxic.

### Is prodiamine likely to contribute to the development of cancer?

The U.S. EPA classifies prodiamine as a “Group C - Possibly Carcinogenic to Humans” based on thyroid tumors in male and female rats.<sup>7</sup> Prodiamine did not cause cancer in mice.<sup>3,7,14</sup> Prodiamine was negative for mutagenicity in all available studies. However, the U.S. EPA determined that it is plausible two of the breakdown products of prodiamine are carcinogens and mutagens.<sup>7</sup>

### Has anyone studied non-cancer effects from long-term exposure to prodiamine?

The target organ of prodiamine in animals is the thyroid.<sup>7</sup> This means the thyroid is the organ most likely to be harmed if an animal is exposed. Researchers have not identified a specific target organ in humans. However, prodiamine can affect the liver, thymus gland, and thyroid gland.<sup>15</sup>

When researchers fed rats prodiamine at 0, 400, 1200, or 4000 parts per million (ppm) for 13 weeks, the rats had effects at the highest dose of 4000 ppm in their food. At that dose, the rats gained less body weight, had increased cholesterol, and had increased urinary protein content.<sup>3</sup> Rats eating 4000 ppm prodiamine for 13 weeks also ate less than rats in the other groups and their kidneys and livers were heavier. No effects were observed at 1200 ppm (80 mg/kg body weight) based on the effects seen at the highest dose of 4000 ppm.<sup>13</sup>

When beagle dogs ate prodiamine at either 0, 200, 600, or 2000 ppm for 13 weeks, dogs that were fed 600 ppm had changes in their blood. Dogs fed the highest dose of 2000 ppm had changes in their blood, heavier livers, liver damage, and their reproductive organs weighed less. Researchers did not see any changes in the dogs fed 200 ppm (5 mg/kg body weight).<sup>13</sup>

The thymus glands weighed less in male dogs fed 600 or 2000 ppm prodiamine than dogs who ate clean diets. Also, male thymus weights were significantly lower than controls in dogs who ate diets with 600 and 2000 ppm prodiamine.<sup>13</sup>

No human studies were found on the long-term effects of prodiamine.

### Are children more sensitive to prodiamine than adults?

Children are at an increased risk to pesticides due to their smaller body size, ongoing organ development, and different behaviors. Keep all pesticides out of reach of children and pets to avoid accidental ingestion.

Young children may act in ways that put them at greater risk of being exposed. For example, they may spend more time near the floor. They may also be more likely to place their hands in their mouths after touching treated surfaces or pets. The U.S. EPA concluded that prodiamine should not be more toxic to children than adults and no additional safety factors in the risk assessments were needed.<sup>16</sup>

Researchers found a birth defect called omphalocele after feeding pregnant rats 300 mg/kg of prodiamine. This is a defect where organs stick out through the abdominal wall. Pregnant rats and rabbits fed 1000 mg/kg and 300 mg/kg respectively gained less weight than unexposed pregnant rats and rabbits.<sup>3</sup>

### What happens to prodiamine in the environment?

Prodiamine is broken down quickly by sunlight.<sup>5,9</sup> It is not likely to leach or reach groundwater.<sup>17,18</sup> Prodiamine is not soluble in water.<sup>17</sup> The **half-life** of prodiamine in water exposed to sunlight is very short, ranging from 2.3-7.3 hours. The half-life of prodiamine in aerobic water conditions is around 18.3-24.9 days.<sup>18</sup>

Prodiamine binds tightly to soil and breaks down slowly in soil. The half-life of prodiamine in sandy loam soil is around 69 days.<sup>5</sup>

Prodiamine is not very likely to become a gas based on its vapor pressure ( $2.50 \times 10^{-8}$  mmHg @ 25°C / 77°F).<sup>18</sup>

#### What is parts per million (ppm)?

Parts per million (ppm) is a unit of chemical measurement. One ppm is one part of the chemical to one million parts of water, soil, or food. Although 1 ppm is equivalent to 1 mg/kg, mg/kg refers to the amount of chemical (in milligrams) per kilogram of body weight, not the concentration in food in a toxicity study. One ppm may also be written 1 mg/L if the substance is a liquid. It is a very small concentration.



photo credit: Paul Brennan, pixabay

### Can prodiamine affect birds, fish, or other wildlife?

Pesticides that enter the environment can affect wild plants and animals. Prodiamine has a potential to bioaccumulate in aquatic organisms.<sup>18</sup>

#### Birds

Birds might be exposed to prodiamine by eating granules, feeding on exposed prey, or by contact with a pesticide product containing prodiamine. Water containing trace amounts of prodiamine is not expected to be toxic to birds.<sup>18</sup>

- Short-term feeding studies have shown prodiamine is practically non-toxic to the canary.<sup>18</sup>
- Northern bobwhite quail and mallard ducks ate up to 1000 ppm prodiamine for 21 weeks. Researchers observed no harm to their health, survival, or reproductive development.<sup>13</sup>

#### Aquatic animals

Prodiamine is practically insoluble in water. This makes it difficult for researchers to accurately measure how much is in water when they run tests and look for impacts to aquatic organisms.<sup>13</sup> However, the amount that can dissolve is low in toxicity to fish. Overall, scientists saw reproductive effects in freshwater fish and invertebrates exposed to prodiamine. However, none of the animals died during tests.<sup>18</sup>

- Researchers exposed bluegill sunfish to prodiamine concentrations of 18 to 320 mg/L for 96 hours. None of the fish died, but all showed signs of excitability at 96 hours.<sup>13</sup>
- Fathead minnows were exposed to prodiamine in their water for 16 weeks. On average, they had fewer eggs for each spawn and fewer eggs per female per day.<sup>18</sup>
- In a long-term study, scientists exposed rainbow trout to 25 µg/L prodiamine for an unknown period of time. The fish were shorter and weighed less compared to unexposed fish. The U.S. EPA concluded that the effects occurred near the limit of solubility of prodiamine in water.<sup>18</sup>
- Researchers exposed water fleas to various concentrations of prodiamine up to 100 mg/L for 48 hours. After 24 hours, the water fleas exposed to concentrations of 18 mg/L or more had erratic behavior.<sup>13</sup>

#### Bees

Prodiamine is low in toxicity to honeybees following contact and slightly toxic following ingestion.<sup>13,18</sup> More data may be needed to fully evaluate risks to pollinators, especially chronic exposure to bees.<sup>19</sup>

#### Worms and insects

Prodiamine is low to moderately toxic to earthworms.<sup>13,20</sup>

- Scientists placed adult earthworms on discs of filter paper treated with prodiamine at five different concentrations for 48 hours. They determined that contact with the prodiamine paper was relatively non-toxic.<sup>20</sup>

- The same scientists exposed 10 adult earthworms to soil containing various amounts of prodiamine. The soil exposure was moderately toxic to earthworms.<sup>20</sup>
- Other scientists found that earthworms exposed to 1000 mg/kg of prodiamine in dry soil for two weeks lost weight.<sup>13</sup>

Prodiamine does not affect the development of other beneficial insects.<sup>13</sup>

- Researchers submerged aphids parasitized by wasps in levels of prodiamine that would be expected in the field. The young wasps were not affected.<sup>13</sup>
- The researchers also submerged ladybug larvae and green lacewing larvae in the prodiamine solution, and they also were not negatively affected.<sup>13</sup>

Soil microorganisms were not affected when scientists treated their soil with prodiamine for 28 days. The soil type was sandy loam.<sup>13</sup>

### Where can I get more information?

For more detailed information about Prodiamine, call the National Pesticide Information Center, Monday - Friday, between 8:00am - 12:00pm Pacific Time (11:00am - 3:00pm Eastern Time) at 800-858-7378, or visit us on the web at [npic.orst.edu](http://npic.orst.edu). NPIC provides objective, science-based answers to questions about pesticides.

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# THE COMMONWEALTH OF MASSACHUSETTS

EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS



## Department of Agricultural Resources

100 Cambridge Street, 9th Floor, Boston, MA 02114

[www.mass.gov/agr](http://www.mass.gov/agr)



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## THE ACT PROTECTING CHILDREN AND FAMILIES FROM HARMFUL PESTICIDES OF 2000

Massachusetts Pesticide Enforcement Consumer Information Bulletin FOR SCHOOLS, DAYCARE CENTERS AND SCHOOL AGE CHILD CARE PROGRAMS

The Massachusetts Pesticide Control Act requires parents, staff, and children to receive this Consumer Information bulletin whenever pesticide applications are being made on the property of your school, daycare center or school age child care program. This bulletin is being provided to you along with a Standard Written Notification form and a Pesticide Specific Factsheet.

### **Why am I receiving this information and what should I do when I receive it?**

The purpose of the Standard Written Notification is to provide you with information about pesticide applications which are taking place on the property of your school, day care center or school age child care program. The bulletin provides information about precautions you can take to minimize exposure to any pesticides. The Pesticide Specific Factsheets provide information about the properties of the pesticides being used.

### **Who applies pesticides in my school, daycare center or school age child care program?**

Commercial pest management professionals, facilities managers, grounds personnel or custodians. Regardless of the approach used, the person who applies the pesticides must have a current and valid Pesticide Bureau Applicator license. Check the standard written notification form for the applicator's license number.

### **How do I know when pesticides are being applied?**

Employees, supervised children and their guardians must receive standard written notification at least two working days prior to the application of pesticides outdoors on the property. The standard written notification form, which accompanies this bulletin, includes:

- approximate dates when the application shall commence and conclude;
- specific location of the application;
- product name, type and EPA Registration number of the pesticide;
- a Pesticide Specific Fact Sheet;
- a description of the purpose of the application and
- this Consumer Information Bulletin

The notification must also be posted in a common area of the facility at least two working days before the outdoor application is to commence and at least 72 hours after the application. Treated areas will be posted with clear and conspicuous warning signs along the perimeter. This information will be supplied to the school by the licensed pesticide applicator.

### **Are applications of pesticides safe?**

All pesticides must be treated with caution. They are intended to be specifically poisonous to target pest insects, weeds, mold, fungus etc. - and may also be harmful to other living things including humans. Some degree of risk is always posed by their use. Because of this inherent risk, a number of regulatory and non-regulatory mechanisms have evolved to deal with those risks. Included among these mechanisms are pesticide regulations such as those enforced by Massachusetts Pesticide Enforcement; licensing and training of pesticide applicators; improved pesticide application methods; and the use of Integrated Pest Management (IPM).

### **What precautions can I take to minimize my exposure to pesticide applications?**

There are several precautions that can be taken to reduce potential exposure to pesticides. These precautions will vary depending on where and how the pesticides are applied. Chemicals may be ingested, inhaled and absorbed through the skin. Know where the pesticide will be applied and how you might come into contact with it. Use common sense. The licensed pesticide applicator is required to post yellow signs to indicate a pesticide application on school grounds. These are some suggested general precautions. Ask the licensed pesticide applicator for other suggestions or directions specific to the work being done.

#### **For outdoor applications:**

- be familiar with the small yellow signs which applicators are required to post when a pesticide is applied outdoors to turf. Stay off the field until the flags are removed.
- if you are sensitive to chemicals, avoid the area of pesticide application for 72 hours.
- ensure that pets are kept away from the area of pesticide application

#### **For indoor applications:**

- cover or refrigerate edible products.
- remove or cover toys, clothes, and bedding from areas to be treated.
- remove pets including their food and water bowls and toys from the area to be treated.
- ventilate as much as possible during and, following an indoor pesticide application, open the windows.
- do not walk on treated areas and carpets until completely dry. Ask about drying times.

### **What types of pesticides will be applied?**

Pesticide applicators may apply pesticides in several forms for control of insects and weeds. Dusts, aerosol sprays, sprays, baits, and fogs are all common forms in which pesticides exist and are used. For control of termites, the soil around the building may be impregnated with a pesticide. To control weeds, pesticides may be used as granules or sprays. Mechanical traps may also be used to control rodents.

In Massachusetts schools daycare centers and school age child care programs have to develop special pest management plans called Integrated Pest Management (IPM) plans. IPM is an approach to pest management which relies on a combination of common sense practices, including pesticides, for preventing and controlling pests. All plans are required to be submitted to the Department of Agricultural Resources. Check the MDAR website to see if your school has submitted its plan. <http://massnrc.org/ipm/index.html>

### **What if I have a question or problem?**

Questions about what pesticides will be applied and why, and specific information about the application should be referred to the licensed pesticide applicator doing the work.

The Massachusetts Department of Agricultural Resources, Pesticide Enforcement is responsible for enforcing the pesticide regulations and laws. Contact Pesticide Enforcement at 617-626-1781. Additional information can be found at the Pesticide Programs website: <http://www.mass.gov/agr/pesticides/>

Updated August 2011