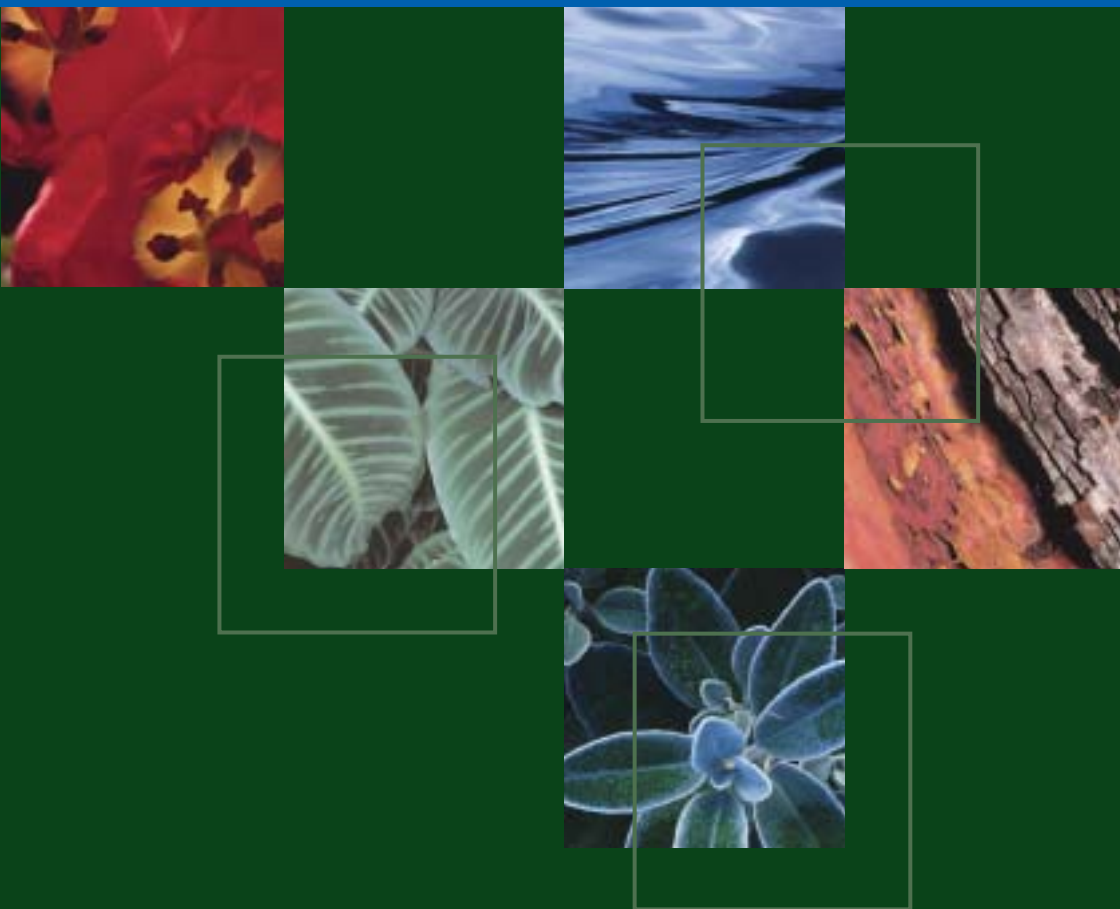


Brush-Off[®] herbicide and the Australian environment



DuPont[™] Brush-Off[®]
herbicide

DuPont is committed to conduct their business with care and respect for the environment. As a result, herbicides are among the most rigorously tested products that are marketed today. They rival pharmaceutical products for the extent of testing conducted to predict which types of effects compounds could have on humans and the environment, and to determine the margin of safety associated with their use. If the margin of safety is not sufficient to protect human health and the environment, the proposed uses either must be modified, or the herbicides are not registered and cannot be marketed.

What is Brush-Off®?

Brush-Off® is a member of the sulfonylurea family of herbicides discovered and developed by DuPont. Sulfonylurea herbicides are used for weed control at extremely low rates (grams per hectare) selectively in cereals, rice, tomatoes and forestry, for noxious and woody weed control and non-selective weed control. The reason sulfonylureas are so effective at these extremely low rates is that they interfere with the activity of an enzyme (acetolactate synthase) found only in plants. In selective uses, such as wheat and rice, the crops tolerate the sulfonylureas because they destroy the herbicide before it reaches the enzyme.

Because sulfonylureas (like Brush-Off®) are designed to affect only a specific plant enzyme, they have minimal effects on humans, animals and insects. In an extensive series of animal and environmental tests, this safety has been confirmed.

It has been widely recognized that on environmental, human safety and efficacy criteria, sulfonylureas, like Brush-Off®, represent a significant advance in the management of noxious or otherwise undesirable vegetation.

How safe is Brush-Off® to humans?

Numerous toxicity tests on laboratory animals have been conducted on Brush-Off®. These include:

- a. Short-term tests which indicate what might happen if someone should accidentally be exposed to Brush-Off® in a concentrated form, either by ingestion or dermally.



- b. Long term tests which are designed to determine any risk from cumulative multiple exposures to Brush-Off® over extended time periods (for example, months to years), such as cancer or organ damage.
- c. Tests for reproductive and developmental effects, to determine the risk of birth defects or effects on fertility.
- d. Tests for determining the risk of genetic damage and mutations from exposure to Brush-Off®

Based on the results of this extensive testing with laboratory animals (lasting several years and costing millions of dollars), it has been concluded that:

- Brush-Off® is very low in acute, short-term toxicity. Australian Regulatory Authorities have determined that Brush-Off® is in the lowest toxicity category for the purposes of identifying the precautionary language that must be on the product label. (It is not classified as Hazardous by Worksafe Australia);
- Brush-Off® does not cause cancer;
- Brush-Off® does not cause birth defects (such as sterility);
- Brush-Off® does not cause gene mutations or genetic damage; and
- Brush-Off® is low in toxicity associated with long term, chronic (lifetime) exposures.

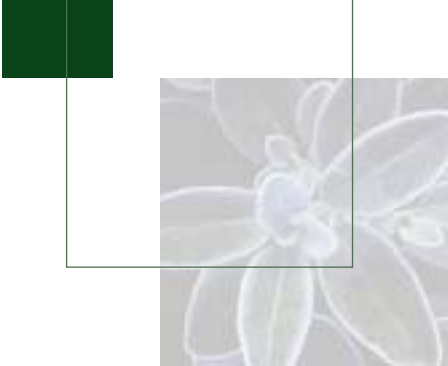
Of course, any chemical should be treated with respect and should be used according to labelled instructions. This is just as true for things like aspirin and table salt as it is for Brush-Off® Brush Controller. When label instructions are followed, DuPont is confident that Brush-Off® is a safe effective product.

How safe is Brush-Off® to wildlife and the environment?

In addition to the tests outlined above, DuPont has conducted extensive studies on the effects of Brush-Off® to wildlife and the environment. Brush-Off® is very low in toxicity to mammals, birds, fish and insects. It degrades rapidly in the environment. Results from an ecosystem study with Brush-Off®, showed the half-life of residues on foliage directly treated with Brush-Off® was less than one day; and after 3 days, no residues could be detected. Brush-Off® is used at very low rates and because the active ingredient degrades rapidly, there is less Brush-Off® released into the environment.

Is there any danger to my livestock that have eaten foliage treated with Brush-Off®?

Health risks to animals from eating vegetation sprayed with Brush-Off® is extremely low. Brush-Off® does not accumulate in animals or the environment: it is readily metabolized in, and eliminated from, animals via natural processes. Brush-Off® is normally applied only once per year and thus animals will not be exposed for long durations.



If I eat berries, fruit or mushrooms that have been accidentally sprayed with Brush-Off®, is there any danger?

The U.S. Environmental Protection Agency has not established tolerances for Brush-Off® on these commodities because there is little likelihood for any significant exposure to residues. Brush-Off® is low in toxicity, is applied at very low rates and degrades rapidly in the environment. Additionally, the treated berries, fruit or mushrooms would not make up a significant part of the diet. Therefore, the margin of safety from eating berries, fruit or mushrooms that have been sprayed with Brush-Off® is quite large. Nevertheless it is recommended that Brush-Off® not be applied to blackberry bushes bearing mature fruit due to the widespread picking of blackberries by the public.

Can I walk through an area after Brush-Off® has been applied?

There is no need to take unusual precautions when walking through an area where Brush-Off® has been applied. In rare cases, Brush-Off® may irritate the skin or eyes, so you should wait until any spray mist has dissipated and dried; this is normally only a few minutes after application.

Anyone applying Brush-Off® should take the normal precautions when spraying, such as wearing a long-sleeved shirt and eye protection. The label states: "Avoid contact with eyes and skin." These instructions are intended for those who handle Brush-Off® in its more concentrated form.

Does Brush-Off® build up in the soil?

No. Brush-Off® degrades readily in the soil and is not considered a persistent herbicide. Brush-Off® exhibits a half life (the time required for one-half of the applied Brush-Off® to be degraded) of about 4 weeks when it is used at normal rates. As for any herbicide, it will degrade more slowly in colder than warmer temperatures. The actual rate of degradation will depend on the environmental conditions. It will degrade more slowly under colder temperatures, drier climatic conditions and higher soil pH situations.

What is the toxicity of Brush-Off® to fish in streams adjacent to areas that have been treated with Brush-Off®?

Toxicity tests with Brush-Off® have been run on representative aquatic species. These include fresh, cold water (rainbow trout), fresh, warm water (bluegill sunfish) and freshwater invertebrates (waterflea and crayfish). Acute studies indicated no toxicity to these species at the highest concentrations achievable in the test. A 30-day study with fathead minnows showed no toxic effects at 2.5 parts per million in the water, a level that is considerably higher than would be possible from normal conditions (an example of abnormal conditions might be the spill of large amounts directly into a stream).





What measures should be taken to ensure applicator safety when mixing and spraying Brush-Off®?

Follow the label directions. Not only is this a requirement of Commonwealth and State law, but it is just good, plain common sense.

Anyone working with any chemical in a concentrated form should take reasonable care to minimize exposure to the product. DuPont makes every reasonable effort to ensure that its products can be used safely. However, it is up to the individual handling a product to use it properly so as to minimize any potential hazards (to either himself or others) that may be associated with its use.

How will Brush-Off® affect desirable plants (crops, ornamental vegetation, etc)?

Years of experience support the fact that Brush-Off® can be safely applied in most situations, as long as the label is carefully followed.

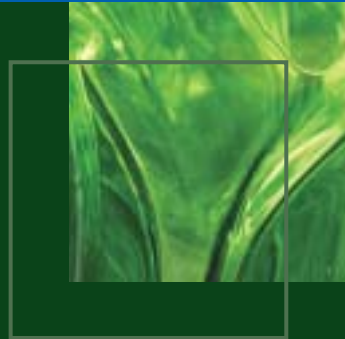
Note – Brush-Off® is not labelled for use on crops or near desirable ornamental vegetation. While Brush-Off® is quite safe to humans, animals and insects, it is a very active herbicide and has effects on many, but not all plant species. Some plants are sensitive to very low levels of Brush-Off® while others are not affected by much higher levels (they rapidly break it down). Because of the effects that Brush-Off® can have on some plants, appropriate precautions should be taken to prevent spray drift or off-target movement of run-off water, or treated soil, into areas where crops or desirable vegetation are growing, or will be grown.

Spray equipment used to apply Brush-Off® preferably should not be used for other than non-crop applications, however if this is not the case then the Brush-Off® label “Cleanout procedure” must be strictly followed.

Where can I get more information about Brush-Off® and other DuPont herbicides?

We encourage the public to become more knowledgeable about the proper use of herbicides. You may obtain more information by contacting Du Pont (Australia) Limited, see over for contact information.





Du Pont (Australia) Limited
Agricultural Products
PO Box 930
North Sydney NSW 2059

Phone (02) 9923 6111
Toll Free 1800 257 169
www.dupont.com.au/ag

 *The miracles of science*[®]

The DuPont Oval logo, DuPont[™], The miracles of science[®], and Brush-Off[®] are registered trademarks or trademarks of DuPont or its affiliates. EB8/04