

**FSC-TPL-01-002 Application for a derogation to use a highly hazardous pesticide**

**Hexazinone**

<b>Name and contact details of certification body requesting derogation:</b>	SCS Dave Wager <a href="mailto:dwager@scscertified.com">dwager@scscertified.com</a> 510 251-7049
<b>Active ingredient for which derogation requested:</b>	Hexazinone
<b>Geographical scope of requested derogation:</b>	Michigan
<b>Is there an accredited or preliminarily accredited FSC Forest Stewardship Standard applicable to the territory concerned?</b>	FSC US standard
<b>Requested time period for derogation:</b>  (Derogations shall normally be issued for a five-year period. There will be a presumption against renewal of a derogation after the expiry of the five-year period).	5 years

## 1. Demonstrated need

Need may be demonstrated where:

- The pesticide is used for protecting native species and forests against damage caused by introduced species or for protecting human health against dangerous diseases, OR
- Use of the pesticide is obligatory under national laws or regulations, OR
- Use of the pesticide is the only economically, environmentally, socially and technically feasible way of controlling specific organisms which are causing severe damage in natural forests or plantations in the specified country (as indicated by consideration, assessments and preferably field-trials of alternative non-chemical or less toxic pest-management methods)

**Explain how the proposed use complies with the specified criteria for need, including the consideration of alternatives which do not require the use of pesticides on the FSC list of 'highly hazardous pesticides':**

### **Background**

Control of annual, perennial and woody weeds is essential for the successful establishment and growth of young red pine (*Pinus resinosa*) plantations. Without weed control, red pine which is shade intolerant may die due to inability to compete for water and nutrients, may be damaged by pests which favour stressed trees, and/or growth rates may fall below economic thresholds.

Young trees that are stressed by weed competition are predisposed to insect and disease problems such as the redheaded pine sawfly, white grubs and armellaria root rot. Thus, the judicious use of herbicides to control competing vegetation can greatly reduce the later use of insecticides.

### **Michigan's Red Pine Plantations**

Michigan has over 250,000 acres of plantation red pine plantation which serve as an important source of dimensional lumber, utility poles and pulp. Assuming an average 80 year rotation, and assuming that this acreage is maintained in red pine production, we would regenerate about 3,000 acres annually. Further, plantations that require control of competing vegetation only need such treatment once and much less frequently twice in the life of the plantation. Many plantations need only a portion of the planting sprayed using hand or ground equipment.

### **Vegetative Competition and Pest Risk**

Plantation red pine pests greatly affected by poor vigor Include white grubs (*Phyllophaga* sp.) and the redheaded pine sawfly (*Neodiprion lecontei*).

White grubs are the larvae of the May beetles. White grubs feed on the roots of tree seedlings causing growth loss and mortality. Injury usually occurs during the first two growing seasons after planting. The most severe injury occurs when planting open fields, abandoned farmland or other areas adjacent to expansive grasslands, especially if there is an aspen component. Management strategies include reducing competitive vegetation within a 2 foot radius of the seedling to assure maximum seedling growth and vigor. The faster the seedling spreads its root system, the more quickly the seedling leaves the grub susceptible stage, and the more rapidly it repairs injuries.

The redheaded pine (RHPS) sawfly is a serious pest of plantation red pine. The sawfly damages young pines less than 15 feet (5 meters) tall. Effects can range from widespread

mortality in younger plantings to stunted and misshapen partially defoliated trees.

Heaviest infestations are common on red pine growing under stress, particularly those at the edges of hardwood forests, on poor soils, and where there is heavy competitive vegetation. This sawfly is also periodically epidemic on plantation pine on better sites, especially during contiguous years of drought.

Susceptibility and vulnerability of plantation red and jack pine to redheaded pine sawfly damage can be reduced by avoiding planting where competition for moisture and nutrients are great, or where soil conditions are marginal for growth. Nonvigorous hosts are most susceptible to this insect. Management promoting tree vigor is beneficial. Thus, sawfly management calls for planting on better pine sites, which often requires some control of competing vegetation via the use of herbicides. Not controlling or less management of competing vegetation reduces plantation vigor; thus, increasing susceptibility to sawfly damage. Assessment of site susceptibility and tree vulnerability to RHPS through pre-planting risk-rating surveys is critical to reduce the likelihood of outbreaks and associated tree mortality. In addition, periodic monitoring to evaluate herbaceous and woody competition ensures cost-effective and judicious use of hexazinone to reduce tree stress and vulnerability.

Planting the more traditional lighter soils associated with pine plantations can reduce vegetative competition, but increases the risk of drought and nutrient stresses associated with these drier sites. As we accept lower yields both by allowing more vegetative diversity in our plantations and by minimizing the use of herbicides, we increase the need for occasional control of redheaded pine sawfly populations.

#### **Not controlling vegetative competition**

Not using hexazinone to control competing vegetation would have negative social and economic impacts on the Michigan state forest system. The result would be poorly stocked plantations, sub-optimizing returns on investment to the people of the state of Michigan and reducing the supply of valued wood products for which these plantations are managed.

Hexazinone is a key herbicide used in the control of many broadleaf weeds that are deleterious to the survival and growth of red pine.

Hexazinone is a triazine herbicide used for pre and post emergent control of many annual, biennial, and perennial weeds, as well as some woody plants. Hexazinone is a systemic herbicide that works by inhibiting photosynthesis in the target plants.

Hexazinone is primarily a soil active herbicide with some contact control, readily absorbed by leaves and roots. Since it is tolerated by many conifer species it is a very safe and effective herbicide for reducing competition from broad-leaf trees and bushes as well as annual and perennial weeds. Unlike other herbicides, it has the advantage of use in the spring and mid summer when red pine is candling (producing new growth). It is uniquely suited for spot treatments of plantings.

Controlling competing vegetation by the judicious use of herbicides will keep young conifers healthy and vigorous therefore greatly reduce the need to control insects which would require the use of insecticides.

#### **Formulation**

Hexazinone is available in soluble concentrate, water-soluble powder, or granular formulations.

It may be applied either before or after planting and maybe applied as a spot, strip, or broadcast application.

The granular formulation works as rain breaks down the pellets thus releasing the active ingredient which can then move downward into the root zone of weeds. On dry sites virtually all precipitation is taken up by plants and very little off-site movement or leaching occurs (Powers et. al)

Both liquid and granular applications are used in forest management. The liquid formulation has better control efficacy and is also appropriate for stem injection and cut-stump methods. Spray applications may also enable a mixture of compatible herbicides and adjuvants to control herbaceous competition.

Granular formulations are applied dry which allows a far wider window of application (timing) with the benefit of reduced drift minimising off target hazards. One formulation incorporates controlled release technology, which provides for delayed release of the active ingredient. Specialist application equipment has been developed for accurate ground and aerial distribution of the granules.

## 2. Specified controls to mitigate the hazard

The derogation shall specify the controls that will be implemented to mitigate the hazard associated with the use of the pesticide, for example restrictions related to weather conditions, soil types, application method, water courses, etc..

If the specified formulation is considered to reduce the level of hazard then the information on which this claim is based shall be presented, and the applicant shall provide credible independent, third party support for the claimed reduction of hazard.

### **Specify the controls that will be implemented to mitigate the hazard:**

#### **Government regulation**

All herbicides registered for use in the U.S. are reviewed and regulated by the U.S. Environmental Protection Agency (USEPA) under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA 1974; 7 J.S.C. 135 et seq., Public Laws 92-516, 94-140, and 95-356) and recent amendments. Herbicides sold in the United States must be registered with the Federal government and in some cases by state regulatory agencies. In California, additional requirements and registration processes are applied that are developed in a transparent governmental rule making arena and subject to full public disclosure and debate. EPA regulations are enforced at the state level through approved agencies. These agencies administer federal legal requirements through training and enforcement programs within each state. Applicator certification or licensing, auditing, pesticide registration and enforcing the terms of the pesticide labels fall within the jurisdiction of the state agencies.

The printed information and instructional material that must be included with registered herbicides that are sold in the U.S. is known as the "label," and constitutes a legal document. These instructions are considered a part of compliance with FIFRA and other Federal regulations, and failure to use an herbicide in accord with label restrictions can lead to severe penalties. The label provides information on the chemical compound(s) comprising the active ingredient(s) of the herbicide, directions for correct use on target plant species, warnings and restrictions, and safety and antidote information. Additionally, information concerning impacts to non-target organisms (particularly threatened or endangered species) is available from both State and Federal Fish and Wildlife agencies (i.e., U.S. Fish and Wildlife Service, Natural Resource Conservation Service, and CA Department of Pesticide Regulation).

Principle 1.1.a., Regional Forest Stewardship Standard for the Lake States-Central Hardwoods Region (USA) requires that "Forest management plans and operations comply with applicable Federal, state, county, tribal and municipal laws, rules, and regulations." Therefore conformance to 1.1.a requires safe, low-risk application. Performance against label instructions (federal law) and MDA policy (state law) is auditable as are on the ground effects. These should all be used to verify conformance to the standard.

#### **Michigan Forest Pesticide Applications**

All Michigan DNR pesticide applications require both an approved Pesticide Application Plan (PAP) and a follow-up Pesticide Use Evaluation Report (PUER). Plans must be approved by two state certified pesticide applicators. One certified applicator develops the PAP which is then reviewed by another certified applicator for final wording and approval.

The following are commonly used PAP statements for aerial applications. They demonstrate care in following the label warning to prevent hexazinone from entering water resources:

- For stands with adjacent surface water, leave a 100 foot no-spray buffer.
- Winds should be low, < 10mph. If tree tops (aspen) are moving, there is too much wind.
- Flight lines should parallel adjacent surface water. This prevents potential non-target exposure and impacts if delays occur in shutting off nozzles at spray boundaries.
- Adjuvants are used to reduce the production of fine spray droplets.
- GIS shape files showing all flight lines with sprayer on and off shall be provided.

MDNR standards require a minimum of a 100 ft untreated buffer next to any water features for both aerial and ground pesticide applications.

### **Forestry Application**

Hexazinone application generally occurs once at the commencement of the rotation as a pre or post planting application. At maximum broadcast rates this equates to the equivalent of 125 grams of active ingredient per hectare per year.

Frequently the application may be as a strip or spot application where as little as 10% to 20% of the site will be treated with the herbicide. Hexazinone is often used as a spot soil treatment in red pine plantations where competing vegetation is not widely distributed. It can be used this way because it does not affect red pine. Such applications greatly reduce herbicide use and non-target impacts.

### 3. Program to identify alternatives

The application shall describe the program(s) which are in place in the territory concerned or which will be put in place during the period over which the derogation will be applicable, designed to identify alternative pest control methods which do not use highly hazardous pesticides.

#### Research

A significant role of the U.S. EPA which regulates and controls pesticide use in the U.S. is to continually review and assess pesticides that are lower risk alternatives. Since 1996 the EPA has reviewed tolerances on nearly 10,000 chemicals and introduced new safety standards. As cumulative risk is evaluated and new standards are developed product labels are updated to reduce application rates or even remove products from use. This ongoing review is also incorporated into the North American Free Trade Agreement (NAFTA) and subsequently supported by similar initiatives in Canada. This program gives preference in pesticide registration to reduced risk products. As a result pesticide use in North America continues to develop lower risk products and application techniques. (U.S. EPA, 2007)

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#### Forest Habitat Type System

Michigan's forest habitat type system, as developed by Kotar and Burger, is used as a basis for silvicultural recommendations because of its ecological relevance. The forest habitat types span a wide range of soil nutrient and moisture regimes from relatively low nutrient and moisture content to rich sites. Each habitat type has its own unique, ecological signature. Management guidelines take these differences into account.

As a general rule, forest health concerns are lowest on higher quality sites (containing adequate soil moisture and nutrients). Risk of redheaded pine sawfly (RHPS), for example, is greatest on poor quality sites. Established red pine on high quality sites are generally less susceptible to drought stress, winter burn and other environmental stressors that can predispose trees to attack by RHPS. However, proper site preparation is critical to ensure adequate establishment of red pine on high quality sites, especially where hardwood competition is established, or where hardwood encroachment is a concern. Controlling competition is particularly important during the first five to eight years on these sites. Planting red pine on high quality, non-red pine sites can exacerbate the above stated problems and the costs of managing are likely greater with less certain results, although returns can be very high. This issue points strongly to using forest habitat type in matching trees to sites.

In addition to site quality, management practices, weather conditions, and many other factors can have a great impact on red pine forest health. These impacts vary depending on the type of forest pest involved:

- Redheaded Pine Sawfly: Avoid red pine management in frost pockets, wet areas, heavy sod and other stressful site conditions such as drought prone areas that can predispose trees to attack. Avoid hardwood edges where shade and encroachment can stress red pine.

- Maintain Red Pine Using “Classic” Red Pine Management.

General criteria used to identify suitable stands:

- Red pine present 60 – 80 years of age.
- The stand is currently a red pine plantation
- Little or no existing deciduous understory nor overstory other than red pine.
- Little or no existing hemlock understory nor overstory.

### **Integrated Pest Management**

Hexazinone use is integrated with other management actions. As stated, reducing vegetative competition by use of herbicides and furrowing produces a more vigorous and therefore, less pest susceptible planting. Guidelines for reducing the susceptibility and vulnerability of red pine plantings to the redheaded pine sawfly include:

1. When practical, avoid planting on excessively dry or infertile soils.
2. Maintain distance of 50 feet from hardwood edges.
3. Control heavy shrub, weed and grass competition.
4. Plant in compact blocks to reduce amount of edge.

Red pine sites by their nature will have occasional redheaded pine sawfly epidemics. Site selection can not eliminate the need for sawfly management, but it can help reduce the need. Some sites have frost pockets or areas of lighter soils with very low moisture holding capacity. Improving our ability to recognize high risk features associated with redheaded pine sawfly susceptibility and vulnerability and not planting trees in these areas will reduce sawfly impacts and the need to use diflubenzuron.

A project to evaluate the red pine resource on state forest lands is currently under way. This project seeks to identify the most appropriate sites to plant red pine. Likewise the project will identify which sites, currently planted in red pine should be managed either for natural regeneration of pine or conversion to other forest types. This initiative will help refine the precision of management prescriptions which will help reduce the risk to RPHS in future red pine plantings.



#### **4. Stakeholder support**

All applications for derogations shall include evidence that the application is supported by social, environmental and economic stakeholders in the best interests of promoting FSC's goals in the territory concerned. It is the responsibility of the applicant to present this evidence in support of their application (see summary of procedures in Section 8, below).

The level of stakeholder support required will be evaluated taking account of the geographical scope of the derogation, the justification of need, and other factors include in the application such as the strength of the program to identify alternatives, and the level of controls to mitigate the identified hazards.

A written letter of support by the Board of Directors of the FSC National Initiative for the territory concerned shall normally be considered sufficient evidence of national stakeholder support for the application.

#### **Describe the consultation that has taken place and summarise the results:**

Stakeholder consultation will occur August 1 through September 16, 2007. This section will be completed at the conclusion of the stakeholder consultation period.

#### **Contingency plan to eliminate use of the pesticide during the derogation period**

Derogations shall normally be issued for a five-year period. There is a presumption against renewal at the end of this five-year period unless it can be clearly demonstrated that the program to identify alternatives has been fully implemented but has failed to identify an acceptable alternative in the available time.

Forest managers seeking certification under an approved derogation should therefore ensure that they have a contingency plan in place to eliminate use of the pesticide prior to the end of the derogation period. If derogation is not renewed, the continued use of a highly hazardous pesticide after the expiry of the derogation would be considered a major non-compliance and would lead to the withdrawal of the certificate.

As a condition of use of a derogated pesticide, forest managers shall record quantitative and qualitative information about their use of such a pesticide, and this information shall be included in the certification body's evaluation reports and in all subsequent surveillance reports.

Compliance with these requirements would need to be demonstrated by an applicant for certification at the Forest Management Unit (FMU) level and be verified by the certification body prior to the issue of a certificate. However, this evaluation is independent of the decision to issue a derogation for use of a pesticide over a geographical area.