



**Minnesota Department of Natural Resources
Division of Fish and Wildlife
PESTICIDES AND PEST CONTROL
GUIDELINES**

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Effective Date: May 2, 2008

Supersedes: 1991 Section of Wildlife Pesticide Use Guidelines
2003 Fisheries Guidelines for Operational Order No. 59

INTRODUCTION

The Minnesota Department of Natural Resources, Division of Fish and Wildlife (FAW) Pesticide Use Guidelines have been developed as required by the Department's Operational Order 59, Pesticides and Pest Control dated October 5, 2004. The Operational Order states as a policy:

“This operational order sets forth policy and procedures for pest*¹ control, pesticide* procurement, handling, storage, use, disposal and record keeping. This applies to all pest control*, pesticide use and pesticide management by employees and outside groups* on Department of Natural Resources (DNR) administered lands or in public waters. Personal use pesticides such as insect repellants are exempt from this operational order.”

“Disciplines of...Fish and Wildlife...are required to develop and maintain discipline guidelines to accompany this operational order. The guidelines contain procedures specific to each discipline that are necessary to implement this operational order.”

¹Words followed by an asterisk are defined in Op Order 59, Glossary, Appendix A. They are asterisked the first time they appear in the text.

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I. GENERAL PESTICIDE POLICIES

Pesticide applications on state lands will use as operational standards the following:

- Operational Order 59 – Pesticides and Pest control
- Division of Fish and Wildlife Pesticide Guidelines
- Pesticide Labels
- Material Safety and Data Sheets (MSDS) for each pesticide and adjuvant being used or recommended.
- Fish hatcheries that operate under an NPDES permit will follow National Pollution Discharge Elimination System (NPDES) permit requirements.

Goals and Objectives

The goal of the Division of Fish and Wildlife pest management actions and efforts are to implement a safe and effective program to protect and improve Minnesota's fish and wildlife resources. Land management objective dictates whether or not we use a pesticide.

Decision to control pests will consider the following three alternatives:

- No control action.
- A control action that does not use a pesticide.
- A control action that does employ a pesticide.

Control actions will be selected based on:

- Public and employee safety
- Potential adverse impacts to the environment
- Ability to accomplish the planned objectives
- Ability to protect or enhance the resource
- Cost to not control the pest
- Cost of the control action

Personal Protective Equipment (PPE)

Product labels specify PPE. All personal protective equipment (PPE) specified on the product label must be provided by the discipline and used by the employee. All applicators must wear: long pants, long sleeved shirts, eye protection, chemical-resistant gloves, and approved footwear. Additional safety equipment required for powdered Rotenone applicators includes powered air purifying respirators and chemical suits.

II. PERSONNEL

The following section identifies the responsibilities for implementing the FAW pesticide program at each of the administrative levels – Statewide, Region, Area.

Responsibilities Statewide

Responsibilities Discipline

Pesticide Coordinators

Wildlife Management Section: Wildlife Operations & Development Consultant (Suzann Willhite).

Fisheries Management Section: Fisheries Habitat & Development Coordinator (Mike Halverson).

- a. Remains current on regulatory changes that affect the use of pesticides, and works with state and federal regulators to ensure that the FAW position is represented and well understood.
- b. Sees that current guidelines and policies are appropriate, and meets the needs of the Division. If guidelines and policies are not appropriate or up to date, coordinates their revision.
- c. Secures funding so that licensing and training requirements are met.
- d. Monitors external training opportunities and informs licensed personnel of relevant training sessions.
- e. Prepares required environmental documents and responds to legislative or legal inquiries or actions with input from the field staff.
- f. Coordinates intra and inter-departmental review.
- g. Coordinates proposal review and notifications to central office staff for “Special Projects” such as sensitive and restricted-use pesticide application projects.
- h. Archives the sensitive and restricted-use herbicide application records.
- i. Archives the statewide Annual Pesticide Application Summary Form NA 00080-02 **by February 1 of each calendar year.**

Regional Responsibilities

Regional/Assistant Regional Manager

- a. Understands and is knowledgeable about Area pesticide needs and goals.
- b. Certification and licensing are not required.
- c. Ensures and verifies that the Area or Program staff complete proper training as needed.
- d. Ensures that the Areas have prepared the necessary project proposals.
- e. Checks and approves FAW Pesticide Use Proposal/Approval Form submitted by the Areas, which may include field reviews.
- f. Ensures that the Areas have completed the Natural Heritage Data Base review as described in the Planning Section. When necessary, assists the Areas in determining appropriate project parameters when the Natural Heritage Database review reveals a potential impact to a sensitive species.
- g. Coordinates cooperative projects with other Region disciplines.
- h. Provides guidance and technical assistance as requested.
- i. Provides standard format for news release.
- j. Directs preparation of Environmental Quality Board (EQB) Notice for restricted-use aerial applications of pesticides
- k. Determines with Area staff when “Special Projects” such as sensitive and restricted-use pesticide application projects need Central Office review, notification or approval.
- l. Collects and reviews the Annual FAW Pesticide Application Summary Form submitted by each Area on pesticide use information on Fish and Wildlife-administered lands in the Region, **by January 15 of each calendar year** so that the forms can be archived in the Central Office.

Area Responsibilities

Area Supervisor/Application Site Lead Worker

Person responsible for the specific pesticide application and directs the on-site activities associated with the specific pesticide application to ensure that the work is conducted in a safe manner, consistent with project goals, product labels, department Operational Order #59 and discipline guidelines. This person will be the responsible party for the treatment site.

- a. Area Supervisor or Application Site Lead Worker must be certified and licensed by Dept of Agriculture. Area Supervisor does not need to be certified/licensed if they are not the Application Site Lead Worker.
- b. Ensures and verifies that the Application Site Lead Worker, contractor, cooperators, volunteers and DNR applicators complete proper training.
- c. Initiates, reviews and approves all Area FAW Pesticide Use Proposal/Approval Forms.
- d. Examines alternative treatments.
- e. Determines with Regional staff when “Special Projects” need Central Office review, notification or approval.
- f. Identifies vegetation/pesticide management needs (rights of way, noxious weeds, etc).
- g. Makes prescriptions that are biologically sound and that are in compliance with pertinent guidelines and legal requirements.
- h. Makes all site-specific arrangements for completion of the project. These include:
 - identifying boundaries and buffer strips
 - monitoring vegetation and treatment conditions
 - notifying contractors and cooperators of the location and boundaries of all sites
 - posting and timely removal of necessary signs
- i. Reviews Natural Heritage Database review. See procedures for Natural Heritage Database review.
- j. Notifies adjacent residents and landowners when appropriate.
- k. Ensures that timely news releases are distributed if appropriate.
- l. Ensures all treated sites, both ground and aerial application, are posted as outlined in the Notification Requirements Section.
- m. Notifies the State Duty Officer and Regional Manager as soon as there is knowledge that an incident or misapplication has occurred.
- n. Ensures that soil texture and organic matter are determined and documented for sites where soil mobile herbicides are prescribed.
- o. Monitors weather conditions.
- p. Provides on site monitoring during the application period for general use pesticides by Section employees.
- q. Provides start up supervision and monitoring for general use pesticide and continuous presence for sensitive application period for contractors.
- r. Ensures that the contractor, cooperator and DNR applicators complete proper application records.
- s. Completes FAW Pesticide Application Report Form.
- t. Completes all pesticide application project effectiveness assessments (post treatment monitoring).
- u. Collects and summarizes all pesticide use information from FAW Pesticide Application Report Forms on Fish and Wildlife-administered lands in the Area, **by January 1 of each calendar year to the Regional Coordinator** so that the Annual FAW Pesticide Application Summary Form can be reviewed and archived by the Region and Central Office. Maintains copies of all records in the Area office.

Pesticide Applicator

DNR personnel, commercial applicator, or volunteer directly applying pesticides.

- a. Receives proper training prior to applying pesticide.
- b. Monitors weather and application conditions.
- c. Applies pesticide as proposed in FAW Pesticide Use Proposal/Approval Form.
- d. Completes FAW Pesticide Application Report Form.

e. Provides input on pesticide application project effectiveness assessments (post treatment monitoring).

III. TRAINING

Training Requirements

To insure pesticides are used effectively and safely, personnel must keep abreast of changes in labeling, prescribed uses, and new products—both pesticides and adjuvants. Pesticides may not be applied by anyone under the age of 18. The cost involved in training and license fees will be covered by the discipline.

Restricted-Use Pesticides Training

All employees who use restricted-use pesticides on DNR administered lands or in public waters must have a MN Dept of Agriculture Non-Commercial Pesticide Applicator Certification of Training in all appropriate categories. Before becoming certified and licensed for the first time, everyone must take and pass a test administered through the County. First time testing is free. Certified personnel must attend a biennial re-certification workshop, or re-test on a biennial basis through the County (\$75 per category after the initial test).

Non Restricted-Use Pesticide Training

All personnel who; are a primary source for pesticide application information, initiate FAW Pesticide Use Proposal/Approval forms, and/or conduct staff pesticide training must have a MN Dept of Agriculture Non-Commercial Pesticide Applicator Certification of Training in at least the “Core” category (previously called “General ground”), or the equivalent. Other Area staff may receive this training at the discretion of the Regional Manager or Area Supervisor. Testing and certification requirements are the same as for Restricted-Use Pesticides.

Annual Training Requirements

All personnel involved in pesticide application, storage or handling will be required to participate in an annual DNR approved training session. Volunteers must have undertaken training equivalent to the annual DNR approved training. Annual training sessions may take place in a variety of forms and formats, as long as all topics listed below are adequately addressed and presented. A DNR instructional CD or written materials will be provided, on request, to aid in training pesticide applicators on the following topics (Parks has developed a training CD, however, there is a need for standardized department wide training):

General Standards of Pest Control and Pesticide Application

- User safety
- Equipment maintenance and use
- Chemical handling and disposal
- Label information
- Material Safety Data Sheets (MSDS)
- Record-keeping
- Employee Right to Know (ERTKA) training

Environmental Standards for Protection of Non-target Organisms

Recognition of pests and non-target organisms

Application techniques Optimum
weather conditions Chemical
persistence and movement Potential
risks to the environment

IV. RESTRICTED-USE PESTICIDES

Policy

All employees who use restricted-use pesticides on DNR administered lands or in public waters must have a MN Dept of Agriculture Non-Commercial Pesticide Applicator Certification of Training in all appropriate categories. (M. S. 18B.34 subd. 1.a.)

Definition

FAW defines the term “use” in the above policy on restricted-use pesticides as “handling open containers”.

V. PLANNING

Pesticide Use Proposal/Approval Process

According to Op Order #59, before any pesticide is purchased and/or applied, a Pesticide Use Proposal/Approval form must be completed and approved. Approval is given by the Area Supervisor, Regional/Assistant Regional Manager, or FAW Section Chief depending on project category.

The “FAW Pesticide Use Proposal/Approval Form” is listed in **Appendix A** and available on the DNR intranet “forms” page under FAW.

Three defined categories of projects are identified as: 1) “Non-Restricted Use” that are routine program applications, 2) “Restricted Use - Routine” that are considered routine and predictable in terms of future treatment, and 3) “Restricted Use - Special Projects” such as, all Rotenone applications, all aerial application and sensitive areas where public concern may lead to controversy.

1) “Non-Restricted Use” (or formerly “Program Projects”) are prepared and approved annually by Area, including:

- Experimental treatments
- Site preparation
- Insect and disease control
- Chemical fish removal
- Noxious Weed Control Program
- Forest Opening Maintenance Program
- Woody Cover Development and Maintenance Program
- Prairie/Grassland Management Program
- Agricultural Program
- Property Maintenance Program
- Invasive Species Control Program
- Walleye Pond - Copper Sulfate

2) “Restricted Use - Routine” are prepared and approved annually by Area and approved by the Region, including:

- Any of the above projects except those identified as “Special” below.
- Large quantity purchases where storage may be an issue.

3) “Restricted Use - Special Projects” are prepared and approved annually by Area, Region, and FAW Section Chief, including:

- All aerial applications
- All Rotenone applications
- Sensitive areas where public concern may lead to controversy.

Pesticide Use Proposal/Approval Steps (*Electronic signatures are allowed and encouraged for timely processing.*)

- 1) Area Supervisor /Application Site Lead Worker originates the Pesticide Use Proposal/Approval Form. Keep a copy of the form in the originating Area.
- 2) Regional/Assistant Regional Manager reviews and/or approves Pesticide Use Proposal/Approval Form, depending on the category of use and archives the information in the Regional Office.
- 3) Region staff will forward “Restricted Use - Special Projects” to Central Office FAW Section Chiefs (copy FAW Program Consultant) for review and approval. Special projects are archived in the Central Office.
- 4) Central Office FAW staff will return signed form to originating office as notification of approval/denial. Originating Area will maintain records on file.

Natural Heritage Database Review

Policy

All pesticide use including ground and aerial herbicide, gopher control, fish control, and insect and fungi control projects will be reviewed at the Area level for potential impacts to rare species and native plant communities. It is the responsibility of the Area/Application Supervisor to insure that the review is done prior to the project proposal/approval form leaving the Area. See **Appendix B** for Minnesota Natural Heritage Information System (NHIS) Data Request Form.

Possible outcomes may include: 1) determination of no impact and project proceeds; 2) modification of application (e.g. timing, location) to avoid impact; or 3) determination that no application/no project is possible on the site.

Natural Heritage Database review prior to herbicide applications to previous cropland is not needed.

Procedures

Review will be carried out by comparing the site locations with locations of rare species and native plant communities from the Natural Heritage Rare Features database. The Areas will be responsible for securing a current copy (less than 1 year old) of the Natural Heritage Rare Features data for their work area to be used in this review. The Ecological Resources’ Regional Plant Ecologists may be contacted to discuss the formats in which data can be received and the steps the Areas should take to secure a current copy.

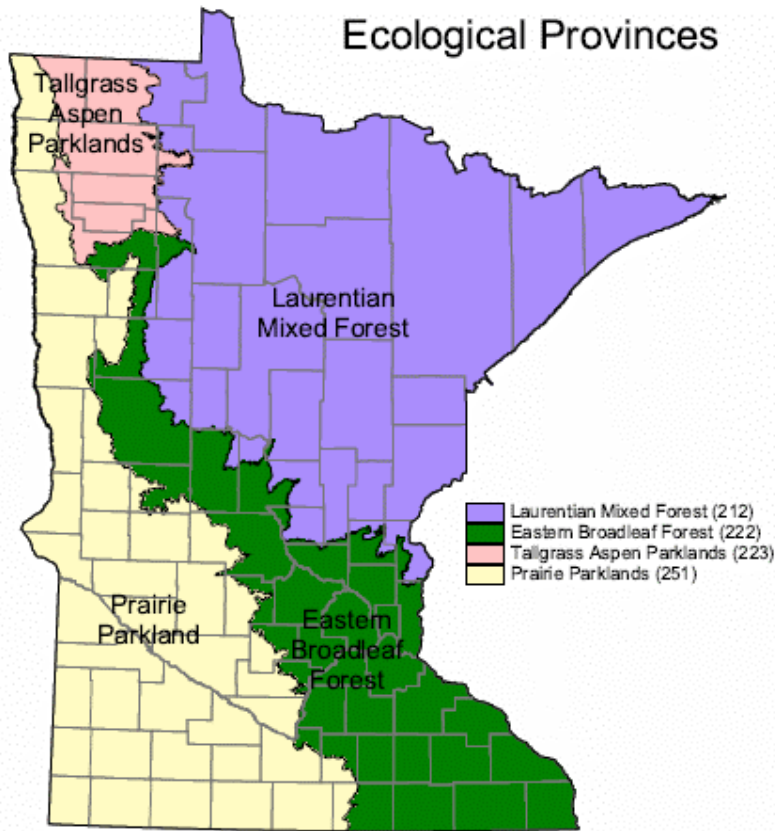
The Area/Application Supervisor will sign off on the Pesticide Use Proposal/Approval forms at the appropriate location verifying that a review was completed and no rare species locations met the review criteria outlined in the following paragraph.

If the Area review determines that there is a rare species or native plant community occurring on or immediately adjacent to the pesticide application site, the Area/Application Supervisor should consult with the Regional Nongame Specialist if the rare feature is an animal or the Regional Plant Ecologist if the rare feature is a plant or native plant community to discuss concerns and appropriate actions to take.

After discussion with the Nongame Specialist/Plant Ecologist, the rare species or native plant community should be noted on the project proposal and drawn on the project map along with any changes in the project due to the occurrence of the rare feature. The Pesticide Use Project Proposal/Approval form should then be sent to the Regional/Assistant Regional Manager for any further review/action.

Prohibited Use Pesticides on Certified State Forest/WMA Lands Policy

The DNR, and its cooperators and contractors, may not use any of the listed hazardous pesticides on the certified State Forests and WMAs it manages in the Ecological Provinces of: Laurentian Mixed Forest, Eastern Broadleaf Forest and Tallgrass Aspen Parklands. This restriction does not apply to the Prairie Parkland Ecological Province.



Procedure

The Area/Application Supervisor will be responsible for reviewing the Ecological Province data and determining when this restriction will apply to pesticide applications. See **Appendix D** for Forest Stewardship Council's Highly Hazardous Pesticide List.

Buffer Strips

Buffer strips must be considered when a potential exists for pesticide to transfer off intended site or due to concern for human presence and activity.

Notification Requirements

Posting of Treatment Areas

All sites treated with a pesticide must be posted as prescribed by the product label, including restricted entry intervals (REI), if required, and in a manner that intercepts entrants to the treatment site with DNR Sign NRM 8.6.12 “Pesticide Treatment Site”. According to Op Order #59, public notice will be given when and where aerial applications of pesticides will take place on DNR-administered lands or in public waters. Additional posting may be done in high use areas or in other special situations. Public notification is not required for directed, hand applications of herbicides such as cut stump treatment, injections, basal bark applications, and spot gun applications.

Local public notification of pesticide treatments

“Special” pesticide applications projects determined by the Area/Application Supervisor and Regional/Assistant Regional Manager to be in the public interest need to provide adequate public notification by publishing an article in local newspapers, which cover the area where application(s) will occur.

Environmental Quality Board (EQB) notification

An EQB notification should also be prepared for any **aerial** application of restricted-use pesticides and any Rotenone applications.

Notification of adjacent landowners

Notification of adjacent landowners must occur for all Rotenone projects.

Cooperative Projects

Policy

Cooperative projects with other agencies or disciplines are encouraged because costs are reduced through the economy of scale. However, cooperative projects should be planned so that they do not affect the timely completion of the Division’s sites. Each agency or discipline is responsible for direct payment of their portion of the contract. Pesticide use will be documented and recorded as required in Operational Order #59. ***The Area must submit the Pesticide Application Report prior to January 15 following the year of the application.***

Cooperative Projects with Other DNR Divisions and Other Public Agencies Projects originating from other Divisions of the DNR will be subject to the DNR Operational Order #59 Pesticide and Pest Control Guidelines of the land-administering discipline. Other public agencies are required to incorporate the FAW guidelines into cooperative projects. FAW personnel will provide assistance but not on-site supervision, and would jointly approve cooperative projects with other agencies. A Joint Powers Agreement should be developed prior to cooperative projects with public agencies, i.e., counties. A Memorandum of Agreement should be developed prior to cooperative projects with tribal entities.

Leases and Cooperative Farming Agreements (CFA)

Leases and CFA's will be subject to the DNR Operational Order #59. FAW personnel will provide assistance to the lessee/cooperator but not on-site supervision for applications. Pesticide use will be documented and recorded as required in Operational Order #59. ***The lessee/cooperator must submit the Pesticide Application Report prior to January 15 following the year of the application, or prior to expiration of contract, whichever comes first.***

Administering DNR Applications by Contract and Agreement

Pesticide applications on FAW administered lands or public waters by non-DNR persons or entities may be permitted via contract with a commercial applicator. The contracted treatment will have prior approval through the FAW Pesticide Use Proposal/Approval Form. The Purchased Service Contract with the applicator will include: the pesticide to be used, application method, cost, rate of application, and delivery of a FAW Pesticide Application Report, in addition to other contract language (effective date, completion date, etc) required. Operational Order #59 states that the vendor must submit the Application Report within 30 days of the date the pesticide was applied or prior to expiration of contract, whichever comes first.

Non-Pesticide Pest Control Application Considerations

Integrated Pest Management (IPM) considers and implements a combination of biological, mechanical, and chemical control methods, that will maximize effectiveness of control, minimize effects on non-target species and monitor the effectiveness of control practices over time. Cost effectiveness of treatments is also an important consideration. Non-pesticide and pesticide controls may be used in concert with, and as part of IPM for a particular pest problem. Evaluation of non-pesticide and combination controls will be a qualitative assessment similar to pesticide control evaluations. The process for proposal, approval and use of a non-pesticide pest control method (biological, cultural, mechanical) will be the same as for pesticide pest control including use of the FAW Pesticide Use Proposal/Approval Form where appropriate. All control methods need to be documented.

Pesticide Application Considerations

Application Methods

Pesticide applications can be made either by aircraft or by ground methods. Application by aircraft may be the only practical option on large areas, sites with poor access, or where ground conditions limit mobility.

Ground applications should be considered for specific management concerns, such as treating areas with high public sensitivity, and to avoid small potholes, wildlife islands, and similar sensitive areas.

Ground applications can either be contracted or done by FAW personnel. It is recommended that wherever possible, experienced contractors be used as they usually have the best equipment and expertise to complete the job.

Labeled Applications

In situations where one herbicide does not meet all the vegetation management goals on a site, tank mixes can be more effective. Many tank mixes are listed on the product labels and may be used where appropriate.

An applicator can sometimes effectively apply different herbicides or tank mixes on separate portions of a single site, although the site size and application method can affect the feasibility and cost.

Use of Certain Soil Mobile Pesticides

Soil active herbicides such as Hexazinone (Velpar and Pronone), Imazapyr (Arsenal and Chopper), Metsulfuron methyl (Escort), Picloram (Tordon, Pathway and Access), and Tebuthiuron (Spike) can be broadcast on a site only if

- at least 75 percent of the treatment area contains soil having loamy sand or finer texture; and
- a minimum of two percent organic matter is incorporated in the top six inches of soil, excluding the litter layer.

Any precautions on the label, such as soil moisture, soil saturation, depth to water table, soil conditions, etc., should also be used to govern the use of soil active herbicides.

No soil active herbicides will be broadcast applied unless the above two criteria and any label restrictions are followed.

Use of Piscicides

Lakes treated with a flowing outlet must be temporarily dammed until piscicide has detoxified or the outflow treated and detoxified as per label directions.

VI. OPERATIONS

Weather

Specifications General

Specifications

Because weather conditions have the potential to adversely affect pesticide coverage, placement, and efficacy, the following weather guidelines should be followed. When label specifications are more restrictive than these guidelines, ***THE LABEL SPECIFICATIONS WILL TAKE PRECEDENCE IN EVERY CASE.*** Be certain that you are in compliance with the label.

Not meeting any one weather factor will be cause for suspension of the pesticide application until all weather factors are within the guideline limits.

No application of soil-active herbicides will be conducted when surface puddling or runoff is anticipated prior to incorporation.

Ground Broadcast Applications with Motorized Equipment

Liquid applications, using motorized equipment with boom or cluster nozzles, will meet the following restrictions:

- a. Wind.** For spray systems with booms and nozzles oriented towards the ground and located within 4 feet of the ground, constant wind speed at nozzle height will not exceed 10 mph ***and gusts will not exceed 15 mph.***

b. Temperature. The temperature shall not be less than 35°F or more than 85°F, when appropriate to the pesticide being used.

c. Humidity. Relative humidity less than 40% should raise a caution, and the project supervisor may consider temporarily halting the operation until the humidity rises above 50%. Under low humidity conditions, some evaporation may occur and pesticide effectiveness may be reduced.

d. Fog. Spraying should be terminated if foggy weather is forecast within 2 hours or rain is forecast within 4 hours except when chemical activity is accentuated by moisture (soil-active herbicides) or the label indicates chemical will be rainfast in less than 4 hours.

e. Inversions. Inversion conditions may exist when wind speeds are less than 2 mph. Application Supervisor should exercise caution when wind speeds are less than 2 mph and if inversion conditions do occur, spraying should be terminated.

f. Dew. Heavy dew on target vegetation may lead to less control than desired. This is especially true for glyphosate herbicides. The Application Supervisor should exercise caution when heavy dew is present and a delay in application until the dew lessens may be warranted.

Spot Spraying & Granular Applications

There are no specific weather specifications for directed liquid treatments for spot applications from backpack sprayers, spotguns, wicks, cut and dab, hack and squirt, and similar systems; and for granular applications. However, applications must comply with all label restrictions.

Aerial Broadcast of Liquid Pesticides

Aerial applications will meet ground weather restrictions except as follows:

a. Wind. Constant wind velocity cannot exceed 5 mph at the spray treatment site or at the heliport if the spray treatment site is inaccessible. When gusting wind conditions occur, the average gust should not exceed 5 mph, and the maximum gust should not exceed 10 mph. Application Supervisors should exercise good judgment and extreme caution when variable wind conditions exist. *Wind speeds should be measured as close to the height of pesticide release as possible.*

b. Turbulence. When air turbulence, inversion conditions or morning fog occur, spray patterns can be adversely affected. The Application Supervisor under these conditions should exercise caution.

Aerial Operations

General Aerial Application Requirements

Flights over population centers should be avoided. A GPS traverse is required for all aerial pesticide application sites. In most cases the GPS traverse will be sufficient to mark project boundaries. In some cases white plastic bags may be used in addition to the GPS traverse.

Since GPS traverses of each treatment site are loaded into the aircraft's navigation system, reconnaissance pre-spray over-flights, with Fish and Wildlife personnel accompanying the pilot, are seldom required. If such a flight is deemed necessary by the Application Supervisor on the site, it should take place shortly before spraying.

Division personnel may not be in the aircraft during the application of any pesticide.

Well-located and maintained landing sites are necessary for efficient and safe aerial herbicide applications. Proper planning will minimize the potential for equipment damage or pesticide spills. See Division of Forestry Pesticide and Pest Control Guidelines for more detailed information on aerial applications.

Emergency Situations

If an emergency or unplanned landing occurs, the Application Supervisor will contact the appropriate authorities. If there is a need for medical assistance, the Application Supervisor will use the cell phone to call 911. The Application Supervisor will coordinate search and rescue operations with the County Sheriff's Office and will secure the scene.

If an herbicide spill occurs, the Application Supervisor will follow the steps that are outlined in Operational Order 59.

Structural or Facility Pests Control Procedures

Structural or facility pest control should be consistent with IPM practices and does need a FAW Pest Control Proposal/Approval Form and a FAW Pesticide Application Report consistent with similar procedures for non-structural applications. This applies to contracted pesticide applications as well as applications by FAW staff. The Application Supervisor will initiate pest control at that facility or structure.

Pesticide use involving spot spraying of wasps, ants, flies and other insects, or trapping of mice for public safety does not require completion of a Pest Control Proposal/Approval Form or FAW Pesticide Application Report. These pesticides can be used as needed. The total amounts used of these products are to be included in the FAW Pesticide Application Summary.

Storage Procedures

Stockpiling of pesticides based on historic use or anticipated needs should not occur. Only pesticides needed during the growing season should be purchased. Unopened surplus pesticides should be returned to the dealer.

Pesticide Application Recordkeeping

Any forms that are required Department-wide and not listed below are listed in Operational Order #59. The forms listed below can be found in **Appendix A** of this document and on the DNR intranet "forms" page.

FAW Pesticide Use Proposal/Approval Form (NA-00092-FAW)

All projects involving the use of any kind of pesticide should use this form for approval and for archiving pre-treatment information. A map should also be submitted with the Pesticide Use Approval Form. Program or routine pesticide treatment projects can be addressed on one form for a number of sites. Special or One- Time Application Projects each require a separate form. The Area Supervisor/Application Site Lead Worker will prepare the form. The Area Supervisor will review and approve the proposal form. Program, Special and One- Time Application Projects forms will be sent to the Region for review/approval. If needed, Special and One- Time Application Projects forms will be sent to the Central Office Discipline Pesticide Coordinator for review/approval.

Copies of these approved forms are kept in the Area where the pesticide treatment is made.

FAW Pesticide Application Report (NA-0081-FAW)

To be used during and after each applications to meet requirements of M.S. 18B.37, subd. 2 and to archive application conditions in case follow up evaluations need to be conducted. This form, or equivalent, documents each pesticide application and will be used to prepare the FAW Annual Pesticide Application Summary Form (below). Originals of these forms are kept in the Area where the pesticide treatment is made.

FAW Annual Pesticide Application Summary (NA-00080-FAW)

This form summarizes the Pesticide Application Report Form for the calendar year. Each Area office must submit this summary to the Region by January 1st of each year. Each Region must submit to the Discipline Pesticide Coordinator in the Central Office by February 1st of each year. This form will be archived by the Discipline Pesticide Coordinator in the Central Office.

Annual Pesticide Inventory (MR Form)

The Area/Application Supervisor in charge of the storage building or area where the products are stored must conduct an annual on-site inventory of pesticides. The Area/Application Supervisor completes the Pesticide Inventory for all pesticides stored on-site and submits the form to Regional Management Resources representative and retains a copy at the Area office.

Post Treatment Evaluation and Monitoring

Pesticide effectiveness will be checked in a timely manner after treatment. Survey intensity is up to the Area Supervisor, but must be sufficient so that the person conducting the survey can map any parts of the site where target species were not successfully controlled. The FAW Pesticide Application Report Form should include the total number of acres and sites treated.

Rotenone treatments will be monitored with netting to check the extent of the kill.

VII. APPENDIX

Appendix A. FAW Pesticide Use Forms

http://intranet.dnr.state.mn.us/fish_wildlife/forms/index.html

FAW Pesticide Use Proposal/Approval (NA-00092-FAW)

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Application and Permit to Apply Toxicants to Waters of the State (NA-01543-03)

Rehabilitation Proposal Worksheet (NA –01540-02)

Rotenone Calculation Spreadsheet

Appendix B. Minnesota Natural Heritage Information System (NHIS) Data

Request Form. An electronic copy of the form is available at the DNR's web site –

http://files.dnr.state.mn.us/eco/nhnrp/nhis_data_request.pdf For Natural Heritage data use training and access information contact the Regional Plant Ecologist.

Appendix C. Fisheries / Aquaculture Information Links

FDA/CVM Approved Drugs for Use in Aquaculture

www.fda.gov/cvm/drugsuseaqua.htm

Guide to Drug, Vaccine, and Pesticide Use in Aquaculture (last updated April, 2007) that is a good reference. The publication provides current information on federally regulated drugs, vaccines, and pesticides that may be used in aquaculture production and in aquatic sites according to product label directions.

The link to this guide is: <http://aquanic.org/jsa/wgqaap/drugguide/drugguide.htm>

Appendix D. Prohibited Use Pesticides on Certified State Forest/WMA Lands

Forest Stewardship Council and Sustainable Forestry Initiative – Prohibited Pesticide List

A combination of both CAS Number (Chemical Abstract Service) and Active Ingredient identifies the Pesticide.

The [CAS Number](#) can be found on the Pesticide (Material) Safety and Data Sheet (MSDS or SDS)

The CAS Number is unique to the specific formulation. See [here](#) for an index of CAS Numbers.

Updated: June, 2015

Direct Questions to Tim Beyer, MN DNR Forest Certification Program Tim.Beyer@State.mn.us

CAS Number	Pesticide active ingredient
542-75-6	1,3-dichloropropene
94-75-7	2,4-D
94-82-6	2,4-DB
96-24-2	3-Chloro-1,2-propanediol
133-32-4	4-indol-3-ylbutyric acid
71751-41-2	abamectin
30560-19-1	acephate
57960-19-7	acequinocyl
135410-20-7	acetamiprid
34256-82-1	acetochlor
101007-06-1	acrinathrin
107-02-8	acrolein
15972-60-8	alachlor
116-06-3	aldicarb
309-00-2	Aldrin
107-18-6	Allyl alcohol
96-24-2	alpha-chlorohydrin
67375-30-8	alpha-cypermethrin
	alpha-hexachlorocyclohexane
20859-73-8	aluminium phosphide
834-12-8	ametryn
348635-87-0	amisulbrom
33089-61-1	amitraz
61-82-5	amitrole
84-65-1	anthraquinone
Group *	Arsen and its coumpounds
1912-24-9	atrazine
60207-31-0	azaconazole
68049-83-2	azafenidin
35575-96-3	azamethiphos
2642-71-9	azinphos-ethyl
86-50-0	azinphos-methyl
41083-11-8	azocyclotin

CAS Number	Pesticide Active Ingredient
22781-23-3	bendiocarb
82560-54-1	benfuracarb
17804-35-2	benomyl
177406-68-7	benthiavalicarb-isopropyl
68359-37-5b	beta-cyfluthrin; cyfluthrin
65731-84-2	beta-cypermethrin
	beta-hexachlorocyclohexane
608-73-1	BHC mixed isomers
82657-04-3	bifenthrin
584-79-2	bioallethrin
28434-01-7	bioresmethrin
2079-00-7	Blasticidin-S
1330-43-4	Borax; disodium tetraborate
10043-35-3	Boric acid
56073-10-0	brodifacoum
28772-56-7	bromadiolone
63333-35-7	bromethalin
1689-84-5	bromoxynil
1689-99-2	bromoxynil octanate
3861-41-4	bromoxynil-butyrate
56634-95-8	bromoxynil-heptanoate
2961-68-4	bromoxynil-potassium
52-51-7	bronopol
23184-66-9	butachlor
34681-10-2	butocarboxim
34681-23-7	butoxycarboxim
Group *	Cadmium and its compounds
95465-99-9	cadusafos
592-01-8	Calcium cyanide
1305-99-3	calcium phosphide
2425-06-1	captafol
133-06-2	captan
63-25-2	carbaryl

CAS Number	Pesticide Active Ingredient
10605-21-7	carbendazim
1563-66-2	carbofuran
55285-14-8	carbosulfan
15263-52-2	cartap; cartap hydrochloride
2439-01-2	chinomethionat
15879-93-3	chloralose
500008-45-7	chlorantraniliprole
57-74-9	chlordan
	Chlordecone
54593-83-8	chlorethoxyfos
122453-73-0	chlorfenapyr
470-90-6	chlorfenvinphos
71422-67-8	chlorfluazuron
24934-91-6	chlormephos
79-11-8	chloroacetic acid
3691-35-8	chlorophacinone
76-06-2	chloropicrin
1897-45-6	chlorothalonil
15545-48-9	chlorotoluron
2921-88-2	chlorpyrifos
5598-13-0	chlorpyrifos-methyl
67-97-0	cholecalciferol
74115-24-5	clofentezine
65996-82-9	coal tar oils; CAS 8002 29 7
1332-40-7	copper oxychloride
1333-22-8	copper sulfate (tribasic); copper hydroxide sulfate
20427-59-2	copper or cupric hydroxide
56-72-4	coumaphos
	dieldrin
5836-29-3	coumatetralyl
	DDT
56073-07-5	difenacoum
104653-34-1	difethialone
35367-38-5	diflubenzuron
130339-07-0	diflumentorim
22936-75-0	dimethametryn
60-51-5	dimethoate
624-92-0	dimethyl disulfide
2274-67-1	dimethylvinphos
149961-52-4	dimoxystrobin
973-21-7	dinobuton
39300-45-3	dinocap

CAS Number	Pesticide Active Ingredient
1420-07-1	dinoterb
82-66-6	diphacinone
85-00-7	diquat dibromide
298-04-4	disulfoton
330-54-1	diuron
Group	DNOC and its salts
03.10.2439	dodine
106-93-4	EDB; ethylene dibromide
17109-49-8	edifenphos
155569-91-8	emamectin benzoate
54406-48-3	empenthrin
115-29-7	endosulfan
145-73-3	endothal
2164-07-0	endothal-dipotassium
	Endrin
2104-64-5	EPN
133855-98-8	epoxiconazole
50-14-6	ergocalciferol
66230-04-4	esfenvalerate
29973-13-5	ethiofencarb
563-12-2	ethion
13194-48-4	ethoprophos
56-38-2	ethyl-parathion
80844-07-1	etofenprox
153233-91-1	etoxazole
2593-15-9	etridiazole
131807-57-3	famoxadone
52-85-7	famphur (ESA)
22224-92-6	fenamiphos
60168-88-9	fenarimol
120928-09-8	fenazaquin
13356-08-6	fenbutatin oxide
122-14-5	fenitrothion
3766-81-2	fenobucarb
72490-01-8	fenoxycarb
39515-41-8	fenpropathrin
134098-61-6	fenpyroximate
55-38-9	fenthion
668-34-8	fentin
900-95-8	fentin acetate
76-87-9	fentin hydroxide
51630-58-1	fenvalerate

CAS Number	Pesticide Active Ingredient
120068-37-3	fipronil
90035-08-8	flocoumafen
69806-50-4	fluazifop-butyl
79622-59-6	fluazinam
33245-39-5	fluchloralin
70124-77-5	flucythrinate
101463-69-8	flufenoxuron
103361-09-7	flumioxazin
658066-35-4	fluopyram
640-19-7	fluoroacetamide
136426-54-5	fluquinconazole
85509-19-9	flusilazole
106917-52-6	flusulfamide
117337-19-6	fluthiacet
68157-60-8	forchlorfenuron
50-00-0	formaldehyde
22259-30-9	formetanate
23422-53-9	formetanate hydrochloride
98886-44-3	fosthiazate
65907-30-4	furathiocarb
98-01-1	furfural
76703-62-3	gamma-cyhalothrin
77182-82-2	glufosinate-ammonium
108173-90-6	guazatine
111872-58-3	halfenprox
69806-40-2	haloxyfop-methyl
	heptachlor
23560-59-0	heptenophos
	hexabromocyclododecane
118-74-1	hexachlorobenzene
86479-06-3	hexaflumuron
78587-05-0	hexythiazox
74-90-8	hydrogen cyanide
35554-44-0	imazalil
140163-89-9	imicyafos
138261-41-3	imidacloprid
57520-17-9	iminocadine triacetate
72963-72-5	imiprothrin
173584-44-6	indoxacarb
74-88-4	iodomethane
1689-83-4	ioxynil
3861-47-0	ioxynil octanoate
2961-62-8	ioxynil-sodium

CAS Number	Pesticide Active Ingredient
36734-19-7	iprodione
140923-17-7	iprovalicarb
24353-61-5	isocarbophos
99675-03-3	isofenphos-methyl
2631-40-5	isoprocarb
881685-58-1	isopyrazam
141112-29-0	isoxaflutole
18854-01-8	isoxathion
58769-20-3	kadethrine
143390-89-0	kresoxim-methyl
91465-08-6	lambda-cyhalothrin
58-89-9	lindane; gamma-HCH
Group *	Lead and its compounds
330-55-2	linuron
103055-07-8	lufenuron
12057-74-8	magnesium phosphide
121-75-5	malathion
8018-01-7	mancozeb
12427-38-2	maneb
2595-54-2	mecarbam
110235-47-7	mepanipyrim
131-72-6	meptyldinocap
Group *	Mercury and its compounds
108-62-3	metaldehyde
137-42-8	metam sodium
10265-92-6	methamidophos
950-37-8	methidathion
2032-65-7	methiocarb
16752-77-5	methomyl
72-43-5	methoxychlor
74-83-9	methyl bromide
556-61-6	methyl isothiocyanate
9006-42-2	metiram
240494-70-6	metofluthrin
21087-64-9	metribuzin
7786-34-7	mevinphos
51596-10-2	milbemectin
Group *	Mineral oils; paraffin oils cont. >3% DMSO(Dimethyl sulphoxide)
	Mirex
2212-67-1	molinate
6923-22-4	monocrotophos
142-59-6	nabam

CAS Number	Pesticide Active Ingredient
300-76-5	naled
54-11-5	nicotine
1929-82-4	nitrapyrin
116714-46-6	novaluron
121451-02-3	noviflumuron
1113-02-6	omethoate
19044-88-3	oryzalin
19666-30-9	oxadiazon
23135-22-0	oxamyl
301-12-2	oxydemeton-methyl
42874-03-3	oxyfluorfen
1910-42-5	paraquat dichloride
56-38-2	Parathion
298-00-0	parathion-methyl
12002-03-8	Paris green
87-86-5	PCP; pentachlorophenol
	pentachlorobenzene
52645-53-1	permethrin
26002-80-2	phenothrin
2597-03-7	phenthoate
298-02-2	phorate
2310-17-0	phosalone
732-11-6	phosmet
13171-21-6	phosphamidon
14816-18-3	phoxim
1918-02-1	picloram
117428-22-5	picoxystrobin
83-26-1	pindone
24151-93-7	piperophos
23103-98-2	pirimicarb
29232-93-7	pirimiphos-methyl
23031-36-9	prallethrin
32809-16-8	procymidone
41198-08-7	profenofos
139001-49-3	profoxydim
1918-16-7	propachlor
709-98-8	propanil
2312-35-8	propargite
31218-83-4	propetamphos
114-26-1	propoxur
23950-58-5	propyzamide; pronamide
34643-46-4	prothiofos
123312-89-0	pymetrozine

CAS Number	Pesticide Active Ingredient
77458-01-6	pyraclofos
175013-18-0	pyraclostrobin
129630-19-9	pyraflufen
6814-58-0	pyrazachlor
13457-18-6	pyrazophos
8003-34-7	pyrethrins (pyrethrum)
96489-71-3	pyridaben
119-12-0	pyridaphenthion
504-24-5	pyridin-4-amine
337458-27-2	pyrifluquinazon
135186-78-6	pyriftalid
105779-78-0	pyrimidifen
13593-03-8	quinalphos
82-68-8	quintozene, PCNB
119738-06-6	quizalofop-P-tefuryl
10453-86-8	resmethrin
83-79-4	rotenone
127-90-2	S421
874967-67-6	sedaxane
105024-66-6	silafiuofen
143-33-9	sodium cyanide
62-74-8	sodium fluoroacetate (1080)
148477-71-8	spirodiclofen
283594-90-1	spiromesifen
57-24-9	strychnine
4151-50-2	sulfluramid
3689-24-5	sulfotep
2699-79-8	sulfuryl fluoride
102851-06-9	tau-fluvalinate
21564-17-0	TCMTB; 2-(thiocyanatomethylthio) benzothiazole
119168-77-3	tebufenpyrad
96182-53-5	tebupirimfos
83121-18-0	teflubenzuron
79538-32-2	tefluthrin
3383-96-8	temephos
149979-41-9	tepraloxydim
13071-79-9	terbufos
33693-04-8	terbumeton
886-50-0	terbutryn
22248-79-9	tetrachlorvinphos
112281-77-3	tetraconazole

CAS Number	Pesticide Active Ingredient
7696-12-0	tetramethrin
7446-18-6	thallium sulfate
71697-59-1	theta-cypermethrin
111988-49-9	thiacloprid
31895-21-3	thiocyclam
59669-26-0	thiodicarb
39196-18-4	thiofanox
640-15-3	thiometon
23564-05-8	thiophanate-methyl
29547-00-0	thiosultap monosodium
137-26-8	thiram
129558-76-5	tolfenpyrad
731-27-1	tolyfluanid
	toxaphene
66841-25-6	tralomethrin
118712-89-3	transfluthrin
112143-82-5	triazamate
24017-47-8	triazophos
72459-58-6	triazoxide
78-48-8	tribufos
52-68-6	trichlorfon
141517-21-7	trifloxystrobin
64628-44-0	triflumuron
1582-09-8	trifluralin
2275-23-2	vamidothion
50471-44-8	vinclozolin
81-81-2	warfarin
2655-14-3	XMC
52315-07-8z	zeta-cypermethrin
1314-84-7	zinc phosphide
12122-67-7	zineb
137-30-4	ziram
160791-64-0	ZXI 8901
1303-28-2	Arsenic pentoxide
75-60-5	Cacodylic or dimethylarsinic acid
2163-80-6	MSMA
13464-38-5	Sodium arsenate
124-65-2	Cacolydate; sodium dimethylarsinate
75-60-5	Chromated copper arsenate; CCA
1327-53-3	Arsenic trioxide
7778-44-1	Calcium arsenate
10103-61-4	Copper arsenate
7784-40-9	Lead arsenate

CAS Number	Pesticide Active Ingredient
7784-46-5	Sodium arsenite
1306-23-6	Cadmium sulfide
2980-64-5	DNOC, ammonium salt
5787-96-2	DNOC, potassium salt
2312-76-7	DNOC, sodium salt
534-52-1	DNOC
7784-40-9	Lead arsenate
7487-94-7	Mercuric chloride
21908-53-2	Mercuric oxide
1319-86-4	Chloromethoxypropylmercuric acetate
27236-65-3	Diphenylmercurydodeceny succinate
104-68-9	Phenylmercuric oleate; PMO
62-38-4	Phenylmercury acetate; PMA
64741-88-4	Mineral oils, paraffin oils
64741-89-5	Mineral oils, paraffin oils
64741-97-5	Mineral oils, paraffin oils
64742-46-7	Mineral oils, paraffin oils
64742-54-7	Mineral oils, paraffin oils
64742-55-8	Mineral oils, paraffin oils
64742-65-0	Mineral oils, paraffin oils
72623-86-0	Mineral oils, paraffin oils
97862-82-3	Mineral oils, paraffin oils

