DEPARTMENT OF AGRICULTURE

www.mda.state.mn.us/incidentresponse

Instructions for Proposal to Land Apply Soil from Agricultural Chemical Incidents

Guidance Document 13

This fact sheet contains instructions for completing the attached ***Proposal to Land Apply Soil from Agricultural Chemical Incidents*** form. At the discretion of Minnesota Department of Agriculture (MDA) staff, completion of the land application form, or selected portions thereof, may not be required for an emergency cleanup of spills, for small quantities of soil, or for other unusual circumstances.

GENERAL INSTRUCTIONS FOR PROPOSAL FORM

- Answers which cannot be completed in the space provided on the form may be continued on a separate attachment.
- Attach all of the items listed in Land Application Note #9 to your application.
- **To expedite review and approval of your land spread application**, MDA staff recommend the following: Submit a copy of page 2 to the MDA for preliminary screening as outlined in Instructions for Completion of Proposal to Land Apply Soil, Item 9; and submit your complete application with **all** required attachments (see Land Application Note #9) in the summer or winter, rather than during the land application season.
- To use this form for approval to land apply liquids or rinsates from agricultural incidents, fill out and follow all instructions as if the liquid or rinsate was pesticide contaminated soil (except that the quantity of pesticide must be based on the total weight of the liquid or rinsate).
- If you have questions regarding the completion of this form, please contact the MDA staff familiar with your site.

GENERAL INSTRUCTIONS FOR EXCAVATION AND LAND APPLICATION OF SOIL

- Do ***not*** consolidate soil excavated from different areas of a facility unless prior approval to do so is obtained from MDA staff.

  Proposals to land apply individual soil piles should be prepared and evaluated separately (see Land Application Note #8 and Item 8 Instructions).

- The pounds of pesticide applied in the land-spread soil must be accounted for when determining pesticide applications at the spreading site in the same season. Specifically, the sum of the land-spread application and subsequent applications in the same season (or following season, in the case of fall land-spreading) shall not exceed label rate restrictions for any pesticide applied. In instances involving nitrogen spills or high soil-nitrogen content, the applied nitrogen must be considered when calculating nitrogen credits for the receiving acreage. The owner of the proposed application property must be informed of the amount and type of pesticide, and/or the pounds of nitrogen to be spread.
- A safety factor must be built into the proposed spreading rate to account for hot spots in the soil pile or the effects of pesticide mixtures. There are several ways to create a safety factor; these are described in points 8C, and 8F of the instructions.

- Pesticide contaminated soil must be spread on a currently labeled site or crop in a manner consistent with the label directions. In the case of annual crops, the crop must be present on the application area during the current season. If land-spreading takes place in the fall, the crop must be present on the application area the following season.

- As part of the land application approval, you must comply with all label requirements for the pesticides involved and listed on the signed application summary. These include, but are not limited to, the Worker Protection Standards, the Federal Record Keeping Requirements, posting requirements and notification requirements. If you need additional information on any of these requirements, contact the MDA project staff or the Minnesota Extension Service.

LAND APPLICATION NOTES

1. Additivity: Certain pesticide families display similar biological activity; members of these families must be summed for application calculations to prevent crop damage. This policy is based upon information from pesticide manufacturers and pesticide labels (example: the Prowl label states that it is additive with trifluralin). The products which must be added are products which are not usually used together in the same crop year.

   Based on this information, you must add the following compounds:
   - Acetanilide Herbicides (acetochlor, alachlor, propachlor, metolachlor and dimethenamid)
   - 2,4-D & 2,4-DB
   - All Triazine herbicides (atrazine, cyanazine, metribuzin, prometon, propazine, simazine)
   - EPTC, butylate, diallate and triallate
   - All Nitroaniline herbicides (trifluralin, pendimethalin, ethalfluralin, etc.)
   - Chlorpyrifos, terbufos and fonofos
   - Total nitrogen = nitrate+nitrite nitrogen + Total Kjeldahl Nitrogen (TKN)

   The application credit on additive compounds is based on the total pounds of all combined products divided by the application acreage. This amount is credited equally for all compounds that were added. For example, a total of 10 pounds of alachlor + metolachlor applied to 5 acres results in a 2#/acre application credit for alachlor and a 2#/acre application credit for metolachlor.

2. For post-emergence applications, application credits must include any pre-plant or pre-emergence applications of the same active ingredient.

3. Except in cases where incorporation is prohibited by the label (example: Prowl label prohibits pre-plant incorporation on corn) or in cases where a crop is present, land applied soil must be incorporated as soon as possible after application.

4. Atrazine application: Generally, fall applications of contaminated soil piles containing atrazine will not be approved. Exceptions may be made such as in cases where the atrazine contamination is very low in comparison to the other contaminants or where extenuating circumstances prevent spring application. MDA staff should be contacted for approval prior to proposing fall application of soils containing atrazine.

5. Land spreading incompatible products may be approved in cases where the application rate will not result in crop injury or illegal crop residues. Since each pesticide mixture is unique, please contact the MDA staff familiar with your site, or for assistance with piles containing canceled products or products which are incompatible with the crop selected.

6. Trifluralin application to corn is only labeled for Post-Emergent applications. Pre-emergent applications of trifluralin to corn may be approved by MDA staff in cases where trifluralin is not the limiting pesticide, as long as the application rate will not exceed 0.18#/acre, which is ½ of the phytotoxic level for a pre-emergent application on corn.

7. The field(s) to be used for land application must be clearly marked (without obscuring map details) on all maps submitted to the MDA for review. If you are not using the entire field, only mark the portion of the field(s) which you plan to use for spreading.

8. You must have a separate, signed application summary for each field which will have different application credits (see Application Instructions for Items 15a-h).

9. **All of the following items are required** before MDA staff will review your land spread application (unless prior approval for changes is received from MDA staff):

   - A copy of the completed land spread application with all questions answered;
   - Signed Application Summary(s) as required;
   - Legible copies of all required maps (topographic, plat and soil maps are required) with the application site clearly marked (see Land Application Note #7) **(Note, faxed maps are usually illegible)**;
   - Copies of all analytical data and application rate calculations; and,
   - Copies of required documentation for notification of local units of government (Item 13).

Note: for application rate pre-screening, you only need to submit the contaminant quantity and application rate calculations table (Item 8) for review.

INSTRUCTIONS FOR COMPLETION OF PROPOSAL TO LAND APPLY SOIL

These instructions correspond to specific items on the proposal form.

Item **Instructions:**

3 Land application is prohibited on the following areas (use USDA soil map and USGS topographic map for reference): Soils with slopes greater than 6 percent; floodplains (soils mapped occasionally or more frequently flooded); within 200 feet of a well, abandoned well or sinkhole; within 200 feet of a perennial or intermittent stream, river, lake, pond, reservoir or wetland; and soil types specifically prohibited for application on the label of the limiting pesticide.

4 If the site has been used for waste disposal activities or land application of pesticide contaminated soil in the past, another site must be selected.

5 Soil from agricultural chemical incidents may **not** be land applied after the excavated soil pile is frozen. Excavated soil may be land applied to a frozen ground surface ***only*** if the applied soil can be incorporated and if there are no label restrictions against incorporation for the limiting product (see Land Application Note #3).

8 In most cases, soil samples must be collected from the excavated soil pile and analyzed for a list of parameters which is approved by MDA staff. The resultant concentrations are then used to calculate the quantity of pesticide and/or nutrients present. The pile must be sampled in a manner which represents the entire pile, including the suspected area of highest concentration. (See MDA guidance document GD 11 Soil Sampling Guidance for information on sampling contaminated soil piles).

An alternative to sampling the soil pile is to use in-situ analytical data (see item 8C) obtained during the remedial investigation (prior MDA approval is needed to use in-situ data and is usually only given if you have recent sampling and analysis).

8A List all contaminants detected in the soil individually, unless the products are to be combined due to additivity (see Land Application Note #1). Additive compounds must be listed together on the same line.

8B For pesticides, consult current EPA product labels for completion of this column. The label selected for each pesticide must be for the product spilled, if known. If the product is not known, select the label for the product most commonly handled at the spill site. In cases where pesticides are additive, you must choose the label for the contaminant which was detected at the highest level.

8C In cases where pesticides are additive, average, or maximum concentrations of additive compounds must be added together (not averaged). For completion of the rest of this table, the total will be treated as a single detected compound.

If only one sample was collected from the soil pile, circle "Max." at the top of the column and list the concentration detected for each contaminant. If more than one sample was collected from the soil pile, circle "Avg." and list the average concentration for each contaminant detected. If in-situ data is to be used, you must circle "Max." and list the highest detection for each compound found in the excavation area. This calculation method will build in a safety factor and allow for excavation and land spreading without mixing the soil. An alternative to this approach is using a weighted average concentration for the contaminants detected (care must be taken to ensure that the pile is thoroughly mixed prior to spreading if a weighted average concentration is used). To use the weighted average concentration, circle "Avg." at the top of the column and list the weighted average concentration (in ppm), calculated as indicated below for each contaminant detected.

a) multiply: contaminant concentration (in ppm) x proportional extent of sample (% of excavation area represented by sample ÷100) = proportionate concentration (in ppm)

b) add all proportionate concentrations = weighted average concentration (in ppm)

8D Calculate the total quantity (in pounds) for each contaminant, using the concentration from column C (as described below). This calculation assumes a soil density of 2400 lb/yd3; alternatively, the site-specific soil density may be used.

a) multiply:
volume of excavated soil (item 6 - cubic yards) x 0.0024 million lb/yd ^{3}
= millions of pounds of soil

b) for pesticides, multiply:
(millions of pounds of soil) x (column 8C - concentration of pesticide in ppm)
= pounds of pesticide

c) for **nitrogen**, multiply:
(millions of pounds of soil) x [(concentration of TKN in ppm) + (concentration of NO_3-NO_2 in ppm)]
= pounds of nitrogen

8E If the pesticide is not labeled for corn or soybeans, cross out the unlabeled crop and write in the labeled crop(s) selected.

8F Using the label from column 8B, enter ½ of the lowest application rate listed for the soil texture and soil organic matter content (listed in item 7) and selected crop(s) at the proposed application site. If a pesticide is not labeled for a listed crop, fill in "N/A". The use of ½ of the lowest application rate builds in a safety factor. Prior MDA approval must be obtained for higher application rates.

For nitrogen assume an application rate of 100 pounds per acre. Alternatively, consult *"Fertilizer Recommendations for Agronomic Crops In Minnesota,"* 1990 Minnesota Extension Service Bulletin AG-MI-3901 (or current version), for crop-specific application rates.

8G For each crop listed and contaminant present, calculate the area required (in acres) to land apply the excavated soil using the **total quantity** (item 8D) from the excavated soil pile and the **application rate** (item 8F).

To calculate the minimum area required to land apply soil:
a) divide: (total quantity)/ (application rate in pounds per acre) = minimum acreage required

9 At this point you may stop and mail or fax a completed copy of page 2 (item 8) of this form to the MDA for preliminary screening. MDA staff highly recommend this approach because the most common reason for application rejections or changes involve the selection of the appropriate crop and the proposed application acreage. (See Land Application Note #5)

9a Using the information in item 8, select the crop to be planted at the identified site. The selected crop should be the one that all of the contaminants are labeled for. If all contaminants are not labeled for the same crop, select the crop which will result in the best fit for the products detected, the total quantity of pesticides and the label application rates. *Note:* if the application site initially identified in item 3 will not be planted to the crop you select, a new site must be selected, and the information contained in item 3 of this form must be changed to reflect the newly selected site.

9b After selecting the crop, find the pesticide in item 8 which requires the greatest number of acres (column 8G) for the crop selected. This is the limiting pesticide for the selected crop. If the limiting pesticide is Metribuzin, you cannot land apply the soil to a field with sandy soils that have less than 2% organic matter.

9c The minimum application acreage required is the highest number of acres in column 8G for the crop selected. When selecting the appropriate acreage for the soil pile, adjustments must be made for incompatible products, canceled products and hot spots in the pile. To make these adjustments, you may need to increase the application acreage (see Land Application Notes 5 & 6).

9d Circle the anticipated application timing (spring or fall) or list if Other.

10 It is important to thoroughly mix the soil pile before it is loaded into the spreading equipment. Special attention must be directed at eliminating hot spots (mixing zones of suspected greater contamination within the pile with zones of lesser contamination). Crushing, pulverizing, screening and/or sorting may be required to remove large debris which is not desirable in the field or may either damage application equipment.

11 MDA staff will not generally approve applications below 1 yd^3/acre, because the spreading equipment generally available is incapable of uniformly spreading below this rate. If MDA staff believe that the application rate proposed is not reasonable for the equipment proposed, we will request equipment testing and calibration using **clean soil**, prior to approval of land spreading for contaminated soil. Equipment such as lime or manure spreaders can adequately spread contaminated soil, turn pulls and scrapers generally cannot.

15a List the source and volume (ex: area 1, 45 yards) of the soil to be land applied. If you plan to spread soil from more than 1 soil pile on one field, list all sources and volumes and the total volume for all areas listed here (the total will be equal to the volume listed in Item 6 of the application).

15b Fill in the selected crop from Item 9a of this form.

15c Fill in the application acreage from Item 9c of this form. If you plan to spread more than one pile to the same field, list all soil sources and their required acreages.

15d Divide total volume of soil to be spread (listed in 15a) by the acres to be used (listed in and enter the result here.

15e Fill in the application timing from Item 9d of this form.

15f Circle Yes, unless the label of the limiting pesticide prohibits incorporation. All land applied soils must be incorporated as soon as possible after application unless prohibited by the label of the limiting pesticide.

15g Circle Yes if the soil is to be mixed before application, or circle No if the soil does not require mixing. Examples where mixing is necessary include sites where an average concentration was used, or sites where more than one pile are to be combined and well-mixed together before application.

15h Fill in the legal description of the proposed application site from Item 3f of this form. If the soil is to be land applied to more than one field, list the locations of all fields receiving soil from the same area or pile (if the fields are owned or operated by more than one individual, use separate application summaries for each field and each owner).

15i List each contaminant detected in this column, starting with the limiting pesticide, and continuing with pesticides requiring progressively smaller application credits. Except for nitrogen, pesticides which were listed together due to additivity must be listed separately (see land application Note #1). You do not need to list contaminants which will result in an application credit less than 0.01 pounds/acre for the number of acres proposed, unless the label rates are at or below this level.

15j For all compounds listed, including those combined in Table 8 due to additivity, the Application Credit equals total quantity (item 8D) acres to be used (item 15b). If you plan to spread soil from more than one soil pile on one field, calculate the application credits for each compound using one of the following methods: 1) If you plan to thoroughly mix the soil piles prior to land application, write "Piles will be mixed" on the application summary and calculate the rate using the total quantity of each pesticide in all of the piles to be applied; or 2) If you plan to spread each pile separately, without mixing, list the highest calculated Application Credit from all piles.

15k The agreement **must** be signed by all the “parties”, and the MDA, before land application can begin.

The form may be submitted for contingent approval, without all of the signatures, as long as the signatures are obtained prior to spreading, and as long as a copy of the form, with all of the signatures, as long as the signatures are obtained prior to spreading, and as long as a copy of the form, with all of the signatures is submitted to the MDA within 10 days after starting the spreading.

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REFER TO THE CORRESPONDING GENERAL INSTRUCTIONS PRIOR TO COMPLETING THIS FORM

APPLICATION DATE: _____

1. Facility or Spill Site Information:
   - a) Site name / MDA case file number _____
   - b) Street Address: _____
   - c) Mailing Address: _____
   - d) City / Zip: _____
   - e) Contact Person: _____
   - f) Relationship to Site: _____
   - g) Phone: ( ) _____

2. Person preparing this form:
   - a) Name: _____
   - b) Title: _____
   - c) Company: _____
   - d) Mailing Address: _____
   - e) City / Zip: _____
   - f) Phone: ( ) _____

3. Proposed Land Application Site:
   - a) Property Owner: _____
   - b) Mailing Address: _____
   - c) City / Zip: _____
   - d) County: _____
   - e) Phone: ( ) _____
   - f) Legal Description of property (township, range, section):

     _____

4. Has there been past waste disposal activities or land application of pesticide contaminated soil at the proposed application site? If so, describe them in detail:

5. When do you propose that the soil will be spread at this site? (MDA approval of this form must be received prior to application.): _____

Determination of the Quantity of Pesticide in Excavated Soil:

6. Volume of soil to be land applied (in cubic yards): _____

7. Soil characteristics of proposed spreading area.
   - A) Soil texture: _____
   - B) Soil organic matter content: Low ○ Medium ○ High ○

CONTAMINANT QUANTITY AND APPLICATION RATE CALCULATIONS

8.	A	B	C	D	E	F	G
	Contaminant	**Label Used** (product name & EPA reg. no.)	**Avg. or Max. Concentration** (ppm)	**Total Quantity** (pounds)	**Labeled Crops** (if other, change name)	**Applications Rate** (½ of the lowest label rate – pound A.I./acre)	**Minimum Acreage Required** (total qty./rate)
	Example: Metolachlor	Dual EPA # 100-673	120	29(100 yd^3)	Corn, Soybeans or other	0.75#/acre (med. soil)	39 acres
1)					Corn		
					Soybeans		
2)					Corn		
					Soybeans		
3)					Corn		
					Soybeans		
4)					Corn		
					Soybeans		
5)					Corn		
					Soybeans		
6)					Corn		
					Soybeans		
7)					Corn		
					Soybeans		
8)					Corn		
					Soybeans		

Additional Considerations:

9. Using the results from number 8 and the instructions on page 4, what is the:
   a) selected crop? _____
   b) limiting pesticide for the selected crop? _____
   c) minimum application acreage required? _____ acres
   d) application timing? (Spring, Fall , other [list]) _____

10. What equipment will be used to spread the soil and how will this equipment be calibrated?

    _____

11. Is the application rate for the limiting contaminant physically feasible with the equipment to be used? If not, propose an alternative approach.

    _____

12. List any other label and/or environmental considerations which may restrict land application of the excavated soil at the calculated rate for the limiting contaminant. Examples include restricted seasonal use of some pesticides; best management practices, the proximity of wells, rural residences, wetlands, surface water or sinkholes to the application site and shallow depth to bedrock. Also, locate the listed physical environmental factors on an attached site map.

    _____

    _____

Documentation of Approval:

13. Appropriate local units of government (County, City and Township) at the application site as well as the owner(s) of the application site must be notified of the proposal to land apply soil from an agricultural chemical incident at least two weeks prior to spreading soil at the site (this may be less in emergency situations, with MDA approval).

    Provide some form of documentation that the landowner(s) and the appropriate units of government (City, County, and Township) have been notified of the proposal to land apply soil from an agricultural chemical incident to their land or within their jurisdiction. At a minimum, identify the name of the contact person, phone number, address and title. Also, list the date and method of notification for each person notified.

14. Complete the application summary (item 15) on page 4 of this form. After the application summary is completed, the contaminant owner and the landowner/operator must sign and date page 4 of this form. Copies of the completed land application form, notification of local units of government and all requested documentation must be given to the landowner/operator and must be submitted to the MDA for review and approval before land application may begin.

15. **APPLICATION SUMMARY**

a) Source and volume of soil: _____

b) Crop: _____

c) Acres to be used: _____

d) Application Rate: _____ cubic yards/acre

e) Application Timing: _____

f) Incorporated? Yes ☐ No ☐ g) Pile(s) to be mixed? Yes ☐ No ☐

h) Application Location: _____

	i) Contaminant	j) Application Credit (lbs/acre)
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

k) **Agreement**:
By signing this Application Summary _____(Responsible Party), and _____(Land Spreader) agree to the terms in this proposal entered into pursuant to Minn. Statute § 18D.1052; and _____(Landowner/Operator) agrees not to exceed labeled rates for the pesticide active ingredients listed (if any), including credits for this application (credits listed in Item 15j).

The parties understand the MDA may monitor compliance with the terms of this proposal by conducting on-site inspections, sampling, and other oversight activities, and that this proposal shall be considered an agreement between the MDA and the parties. The MDA reserves the right to modify or rescind this proposal for just and reasonable cause upon written notification to the parties.

If a party violates this agreement, the MDA reserves the right to enforce the agreement pursuant to Minn. Statute 18D.301-331.

_____ _____

Signature of Soil Contaminant Owner

_____ _____

Signature of Landowner/Operator

_____ _____

Signature & License # of Spreader

☐ _____ ☐ _____ _____

MDA Approval as Proposed or MDA Approval as Modified

In accordance with the Americans with Disabilities Act, this information is available in alternative forms of communication upon request by calling 651-201-6000. TTY users can call the Minnesota Relay Service at 711. The MDA is an equal opportunity employer and provider.