

# DISCHARGE OF LIQUID INDUSTRIAL WASTES IN A LAND APPLICATION PROGRAM

Fact Sheet

WPDES Permit No. WI-0055867-06

March 2012

## A. Background and Rationale

Chapter 283, Wis. Stats authorizes the Department to issue a general permit for discharges from specified categories or classes of point sources if they are not a significant contributor of pollution. The general permit can be withdrawn if the point source is not in compliance with the terms and conditions of the general permit. The Department also may withdraw a discharge from the coverage of a general WPDES permit and issue an individual WPDES permit on its own motion, or upon the petition of any general permittee, affected state, or 5 or more persons affected by the disposal practices of a general permittee.

This general permit will require that the permittee submit a Land Application Management Plan containing pertinent information about the industrial or commercial process that generates the wastewater, the wastewater storage and transportation system, and the land application sites. It will also require a tracking of the volume land applied and representative sampling and analyses for pollutants that are expected to be present in significant quantities.

If a management plan has not been approved by the Department prior to the reissuance of this permit, the permittee must submit a management plan to the Department for approval not more than 60 days from the date of reissuance of this permit or from the date that coverage under this permit was granted, whichever is later. When granting coverage under this permit, if the Department determines that a previously approved management plan must be amended, the Department will require the permittee to submit an amended management plan not more than 60 days from the date that coverage under this permit was granted. This time period provides dischargers sufficient time to gather samples, have them analyzed, and calculate which substance is the critical limiting pollutant.

This general permit **may not** be used for contract haulers servicing industrial customers. If a contract hauler wishes to land apply wastewater for a customer it must be done under a specific permit issued to the contract hauler or the permit (either specific or general) of the customer.

## B. Discharges Eligible for the General Permit

This general permit will be issued for long-term discharge of small volumes of wastewater and for short term discharges of larger volumes of whey, whey by-products, milk contaminated with antibiotics, and other wastewater. This general permit will also be used by the Department to react to urgent requests to land apply wastewater due to unexpected problems, such as an upset of a wastewater treatment plant.

The following situations are examples of use of the general permit to regulate land application activities:

### 1. Routine land application of small volumes of process wastewater

Wastewater discharges that pose little potential for environmental harm can be adequately regulated without issuing a specific permit. The general permit has no specific limit on volume but the Department intends that coverage be limited to volumes of approximately 10,000 gallons per day.

### 2. Occasional land application of whey and whey by-products

Some dairy product processors have whey processing equipment but, due to market conditions or equipment failure, they wish to land apply excess whey or whey by-products on an irregular basis. . If this discharge becomes part of a regular management plan and over 10,000 gallons per day, the discharge will be regulated by a specific permit through a permit reissuance or modification.

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Additionally, on occasion dairy processors detect antibiotics in milk received from farmers. This milk can not be processed. This general permit may be used for land application of this milk.

### 3. Unexpected or urgent needs to land apply high strength wastewater

On occasion wastewater generators request a permit to land apply high strength process wastewater or other wastewater streams. This is generally done to reduce overloading of their wastewater treatment plant or a publicly owned treatment works (POTW). It takes at least 90 days to issue an individual permit. In this situation the general permit would be used to regulate the land application program. If it is anticipated that the discharge will continue long term (normally greater than one year), it will be necessary for the generator to obtain a specific permit to replace coverage under this general permit.

### 4. Sweet corn silage leachate

Sweet corn silage leachate can be regulated by the general permit. However, if the generator already has a WPDES permit for other discharges, all discharges should be regulated in the specific permit. The general permit can also be used to regulate other food byproduct leachate from storage sites.

### 5. Other types of wastewater

The general permit will be used to regulate industrial or commercial wastewater that is biodegradable. It will not be used to dispose of nonbiodegradable pollutants, except for ions like chloride that can be limited to the rate necessary to comply with NR 140 groundwater standards. It is important for the permittee do a thorough wastewater analysis and calculate the per acre loading rate for each pollutant.

The general permit excludes wastewater with significant quantities of nonbiodegradable pollutants, toxics or hazardous substances, or high chloride concentrations. Liquid wastes specifically not eligible for coverage under this permit are those containing toxic or hazardous substances, unless the facility demonstrates to the Department that the discharge of such pollutants will be in such small quantities that no environmental contamination will result and the groundwater standards established in NR 140 will not be exceeded. Examples of toxic or hazardous substances not eligible are: solvents, lubricants, biocides, dioxins, PCBs, and any other priority pollutants. Liquid waste with high chloride concentrations which the Department determines to have a high probability of causing exceedances of the groundwater standards for chloride are not eligible for coverage under the general permit. Salt whey and salt brine shall not be regulated by the general permit. The only exceptions to this is that an interim general permit can be used in situations where the Department agrees that land application of these high chloride concentration wastewaters must be done immediately to alleviate a more severe pollution problem. Wastes regulated by the general permit must be exempt from NR 518, Landspreading of Solid Waste. NR 518 specifically exempts whey and has a general exemption for waste applied as a soil conditioner or fertilizer.

## C. Conferring Coverage & Submitting a Management Plan

The general permit can be used in situations where the industrial wastewater point source is not a significant contributor of pollution. To be covered by this permit a land applier must submit to the Department a land application management plan. The plan must have the following information:

- The type of commercial or industrial process generating the wastewater and a characterization of the wastewater.
- Wastewater storage, transportation and application.
- Land application sites information.

**The Department has attached an industrial wastewater land application management plan outline to assist the permittee to develop the management plan.**

D. Site Approval Requirements

The general permit requires that all land application fields be approved by the Department prior to using them. The permittee will be required to provide all requested information on DNR Form 3400-53, along with other pertinent information that will allow Department staff to make a timely determination on the field acceptability. The site conditions in the general permit regarding slope, separation distances, and other criteria are taken directly from NR 214.17 and include:

1. Land application sites shall have minimum separation distances of:
  - 500 feet from an inhabited dwelling; except that this distance may be reduced to 200 feet if incorporated and the owner and occupant give their written consent.
  - 250 feet from a potable water supply well and 1000 feet from a well serving a community public water supply
  - 200 feet from any surface water except that this may be reduced to 100 feet when a vegetative buffer strip is maintained between the site and the surface water
  - 36 inches between the ground surface and bedrock or groundwater. The Department may allow a reduced separation distance to a minimum of 18 inches on a case-by-case basis provided the rate of application is reduced. In addition this permit restricts application on soils with less than 36 inches of separation to April through September. This will help ensure that actively growing crops will take up nutrients and water.
2. Land application sites may not be located in wetlands or in a floodway. Ch. NR 116, Wis. Adm. Code, defines floodway as the channel of a river or stream, and those portions of the floodplain adjoining the channel. Application sites may be located in the floodplain (land which has been or may be covered by floodwater during a flood), provided the site is not used when the floodplain is flooded.
3. Land application sites shall be limited to cultivated cropland, tree plantations, pasture, or hayland. Other sites may be reviewed and approved by the Department in writing on a case-by-case basis.
4. Land application sites shall be limited to a slope of 12% or less when the ground is not frozen or snow covered. When the ground is frozen or snow covered, application shall be limited to sites with slopes up to 2%. Sites with slopes of 2% to 6% may be approved by the Department in writing for winter application on a case-by-case basis.

E. Limits on the Application of Wastewater

The general permit has limits on the per acre loading rates for volume, total annual nitrogen, and total annual chloride which are taken directly from NR 214.17. For any particular type of wastewater, one of these will likely be the most restrictive. For example, for a low strength process wastewater the daily and weekly volume limits will probably be most restrictive. For whey permeate and sweet corn silage leachate the annual nitrogen loading will be most restrictive. For dairy wastewater that has higher salt concentrations, the annual chloride limits will likely be the most restrictive. In the management plan the permittee shall analyze their wastewater and land application sites and make a self determination of the limiting parameter and that limit.

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**F. Land Application Operational Requirements**

Operating requirements in the general permit are the same as in 214.17. These requirements include allowing no runoff or ponding, loading and resting, even wastewater distribution and use of manure pits.

If wastewater is 10% or less of the mixture contained in a manure storage structure, the permittee is only required to account for the wastewater transported to the manure storage. The proper land application of the manure/wastewater mixture is the responsibility of the farmer and is not subject to regulation under the general permit or NR 214. However, the farmer's application of the manure wastewater mixture may be subject to regulation under NR 243, Animal Waste Management. The permittee requesting to use a manure storage structure must provide design data showing that the pit was designed to NRCS standards or equivalent sealing specifications and receive Department approval for use of the structure.

The land application program must be operated in conformance with the land application management plan reviewed and approved by the Department. If significant operational changes are needed, the management plan must be amended by submitting a written request to the Department.

**G. Monitoring and Reporting Requirements**

1. The permittee will be required to keep a daily record of the liquid waste land applied. **The daily record shall be kept in the land application vehicle for a minimum of 7 days following an application.** These records shall be available for inspection by the Department for a period of three years following application.
2. The general permit requires monthly analyses for Total Kjeldahl Nitrogen (TKN) and chloride, quarterly for phosphorus, and annually for total solids. Since the wastewater general permit will be used mostly for food processing wastewater, the required analysis will provide the necessary information. However, it is the responsibility of the permittee to report any raw materials, additives, or processes that may result in significant concentrations of other parameters and to then analyze for these parameters.
3. The permittee shall submit annual analytical and land application reports on forms provided by the Department (3400-49 and 3400-55, respectively) by January 31 of the year following the completed reporting period. The reports must be signed by an appropriate official.

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**INDUSTRIAL WASTEWATER LAND APPLICATION MANAGEMENT PLAN OUTLINE**

Chapter NR 214, Wis. Adm. Code requires any industrial, commercial, or agricultural operation which engages in land application to develop a management plan. The code requires that each land application program owner or operator submit a management plan for optimizing system performance and demonstrating compliance with the requirements of the chapter. Following approval by the Department, the system must be operated in conformance with the management plan. If the facility wishes to operate differently than specified in the approved plan, a written request must be submitted to the Department for approval to amend the management plan. The plan must specify information on: wastewater volumes, characteristics, and origin; description of all site locations; availability of storage; type of transportation and land application vehicles; contingency plans for periods of adverse weather; and any other pertinent information. The management plan must be modified for each change in wastewater type or characteristics.

Since industrial wastewater can be generated by a very wide and diverse range of industrial and commercial activities, an outline for a suggested management plan is provided below. This document is intended solely as guidance and does not contain any mandatory requirements, except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts. Each item on the outline shall be adequately discussed in the plan. If an item is omitted, the owner/operator shall have an explanation as to why the requested information is not relevant.

**A. Wastewater Source and Handling**

1. Describe the industrial or commercial processes that generate the wastewater. List the raw materials used and the products produced.
2. Specify type of wastewater treatment processes prior to land application. These may be processes such as screening; settling; aerated storage tank or pH adjustment. List any chemicals used in the wastewater treatment processes.

**B. Wastewater Characteristics**

1. A representative sample of wastewater shall be analyzed for Kjeldahl nitrogen, ammonia-nitrogen, BOD<sub>5</sub>, chlorides, phosphorus, and potassium.
2. If the industrial processes or treatment process use any raw materials or chemicals containing significant quantities of other elements or compounds such as metals, oil and grease, hydrocarbons, or additives, it is the permittee's responsibility to analyze for their parameters.
3. Report the quantity of wastewater to be applied on a daily, monthly, or annual basis.

C. Wastewater Storage and Transportation

1. The type of wastewater storage and/or treatment vessels must be described. This will include size, shape, volume, and materials of construction. For earthen lagoons, the liner or sealing soils shall be specified and the depth to groundwater and bedrock determined. For buried tanks, also specify the depth to groundwater and bedrock and the type of vent, manhole, and high level alarm provided.
2. If liquid manure storage structures are used to store a mixture of manure and wastewater, provide information on the volume of the structure, the volume of wastewater to be discharged, evidence to show that the structure meets or exceeds USDA NRCS Technical Bulletin Section IV Design Criteria 313 (12/05), or equivalent sealing specifications and identify who will be responsible to land apply the manure wastewater mixture.
3. Describe the method of pumping the wastewater to the hauling vehicle and the type and capacity of the hauling vehicle.
4. Explain if the application vehicle will be unloaded with a high pressure spraying gun, spreader bar, splash pad, or some other device.
5. State how the total volume hauled will be measured and what kind of records will be kept.
6. Explain where the wastewater samples will be collected to obtain a representative sample.
7. Discuss what contingency plans have been developed in case of inclement weather.

D. Wastewater Land Application Site Information

1. Show the location of each application site indicated on a site map such as a USDA soil survey map, the description of each soil type and slope, and estimated depth to groundwater and bedrock must be included.
2. Provide an USGS topographic map or an aerial photograph with the proposed site outlined. Aerial photographs are generally available from the county Farm Services Agency (FSA) office.
3. Each site map shall clearly show by cross hatching lines, or some other means, exactly which areas have suitable conditions and are proposed for land application.
4. Describe the crops to be grown or the dominant vegetation on the land application site and the anticipated harvest and removal schedule.
5. Describe adjacent land use, drainage, and land features associated with the site. Show the distance to wells and streams.
6. Explain the ownership of the site, and the site number used for identification by the hauler.
7. Attach a copy of any land use agreement.

8. Estimate the total acreage to which the wastewater will be applied.

E. Site Loading and Application Information

1. Describe how the wastes will be applied. For meat processing wastewater, this should include an explanation on any special considerations, such as injection or immediate incorporation, to reduce the risk of spreading TSE.
2. Describe any special restrictions on cropping practices to reflect the type of wastes.
3. Specify the total volume of wastewater that can be applied to reach the nitrogen needs of the crop. The nitrogen loading will generally be limited to 165 pounds per year in the general permit. Increased nitrogen loadings may be allowed if specified in a management plan that has been approved by the Department or in a specific WPDES permit based on crop needs and available nitrogen.
4. Calculate the chloride loading rate and demonstrate that it will not exceed 340 pounds per acre per two year period.
5. Calculate the per acre loading rate of phosphorous.
6. Specify how the application will be tracked to ensure uniform distribution across the site. This shall include a discussion on the use of methods such as staking of the site or use of a Global Positioning System (GPS) to locate areas of previous application.