Minnesota Pollution Control Agency

10-Step Guide to Land Applying

Small Amounts of Industrial By-Product from food and beverage processes

Water Quality/Land Application #2.04, Jan 2008

An "Industrial By-Product" or "IBP" is a residual material resulting from industrial, commercial, mining, and agricultural operations that are not primary products and are not produced separately in a production process.

IBP from food and beverage operations are good candidates to be managed via land application. IBP from food and beverage processing operations typically contains nutrients such as nitrogen, potassium and phosphorus – the same nutrients found in commercially produced fertilizers.

If a permit is required for land application activities, refer to the MPCA land application web page located at: http://www.pca.state.mn.us/water/landapp.html for additional information and permit application forms.

Who is this fact sheet for?

This fact sheet is intended for use by persons or operations that generate and land apply small amounts of industrial by-product (IBP) from a food or beverage operation, and have pre-determined that the land application activity does not require permit coverage. This fact sheet is not applicable to land application activities requiring a permit.

Consult with MPCA staff to determine whether a permit for land application is required. Typically, a permit is not required for land application of less than or equal to 50,000 gallons or 10 dry tons of industrial by-product per year. Storage of IBP without a permit is limited, and a permit may be required even for these small volumes if loading and/or concentration limits may be exceeded, or if MPCA staff believes more oversight of the land application activity is needed.

A list of MPCA land application staff are included on the MPCA land application web page:

- MPCA Contacts for Land Application of Industrial By-Products (sorted by type of by-product) (http://www.pca.state.mn.us/publications/wq-lndapp8-02.pdf).
- MPCA District Contacts for Land Application of Industrial By-Products (http://www.pca.state.mn.us/publications/wq-lndapp8-03.pdf).

Best Management Practices

Application of nutrients to agricultural areas, either in the form of conventional fertilizers or by the reuse of nutrients from IBP, must be done in accordance with scientifically established agronomic rates to avoid contamination of ground and/or surface waters from these nutrients washing off the land (to surface water) or through the soil profile (to ground water).

Following the Best Management Practices outlined in this fact sheet minimizes environmental risk in land applying small amounts of IBP through limitation of application rate, and the monitoring of soil to ensure that the crops and the land is using nutrients applied.

For more detailed information on these steps and additional land application topics, refer to the MPCA companion document to this fact sheet: "Guidelines for Managing Industrial By-Products from Food and Beverage Processing Industries (wq-lndapp2-03)". Current versions of land application publications are maintained on the MPCA land application web page located at: http://www.pca.state.mn.us/water/landapp.html.

Step 1: Analyze the industrial by-product to be land applied.

Industrial by-product that is land applied must be fully characterized before it is land applied the first time. After that, industrial by-product to be land applied must be analyzed at least once per year.

Test a representative sample of each IBP to be land applied according to Table 1, below. Analytical sampling of sweet corn silage is not necessary.

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To ensure that representative sampling is done, all pollutants with the 'reasonable likelihood' of being present should be analyzed for, which means that additional analytical testing may be needed (see list potential analytes in Table 2, below). To determine whether a particular pollutant has a reasonable likelihood, use your knowledge of the waste and waste generation process, as well as in consultation with MPCA staff; MPCA may also request additional analysis when the Notification is submitted (see Step 2). If there is a possibility that your IBP contains polychlorinated biphenyls (PCBs) or dioxin/furan compounds, these must also be analyzed for, and the test results discussed with the MPCA.

Table 1. Baseline analytical requirements for IBPs.

Analyte	Unit of Measure
Chloride, Dry Weight (as Cl)	mg/kg
Nitrogen, Kjeldahl, Total, Soild Fraction, Dry Weight[1]	mg/kg
pH, sludge	SU
Phosphorus, Dry Weight (as Total Phosphorus)	mg/kg
Sodium, Dry Weight (as Na)	mg/kg
Solids, Total	Percent
Oil and Grease, Total[2]	*mg/kg*

[1] Nitrate testing may be necessary for some IBP(s)
[2] Oil and Grease, Total, in mg/kg should be tested for when present in IBP(s)

All analytical results should be reported on a dry weight basis; keep copies of the analysis results for your records.

Step 2. Complete a "Notification to Land Apply Industrial By-Product without a Permit" form.

A Notification to Land Apply Industrial By-Product without a Permit (Notification) form must be completed and submitted for all facilities not requiring an MPCA permit. This form is located electronically at: http://www.pca.state.mn.us/publications/wq-lndapp7-14.doc.

A Notification form must be submitted at least 30 days prior to the initiation of land application activities. In some cases, MPCA staff may be able to reduce the amount of time needed for MPCA review. Within this 30 day timeframe, MPCA staff will review the Notification and either concur with the determination, or determine that a permit or additional information, such as additional sampling or monitoring, is required. If the MPCA concurs with your determination that a permit is not required, a formal response will not be sent; land application activity can commence at the end of the 30 day time period. If, after review of the Notification submitted, the Agency does not concur with your determination that a permit is not required for the facility, the Agency will notify you of this determination within the 30 day time period. Land application activity may not commence until the discrepancy has been resolved and a permit issued for the project, if required.

Table 2. Additional analytical requirements.

Analyte	Unit of Measure
Total Arsenic	mg/kg
Total Boron	mg/kg
Total Cadmium	mg/kg
Total Calcium	mg/kg
Total Cobalt	mg/kg
Total Copper	mg/kg
Total Iron	mg/kg
Total Lead	mg/kg
Total Magnesium	mg/kg
Total Manganese	mg/kg
Total Mercury	mg/kg
Total Molybdenum	mg/kg
Total Nickel	mg/kg
Total Potassium	mg/kg
Total Selenium	mg/kg
Total Sulfur	mg/kg
Total Zinc	mg/kg
Total Dioxin equivalents	parts per trillion
Total Polychlorinated biphenyls	mg/kg

Step 3. Determine the suitability of proposed site(s) for land application.

Before a site can be used for the first time, the suitability of a proposed site must be determined to ensure that the soils are able to utilize the nutrients in the industrial by-product, and that the geography of the site is amenable to land application.

Soil suitability can be determined by obtaining information from soil surveys published by the Natural Resources Conservation Service (available on-line at http://websoilsurvey.nrcs.usda.gov/app) or by characterization of the site by a state of Minnesota licensed soil scientist, or other qualified person, such as a Type IV certified land applicator.

An application site will be considered suitable if the site is used for growing a crop which is harvested and removed during the cropping year that the IBP is land applied AND the restrictions on slope, separation distances, and crop restrictions (applicable to pathogen-

containing IBPs), as described in this fact sheet, are maintained.

Slope. Restrictions on slope allow IBP to maintain contact with soil and keep IBP where it is applied. This is necessary to ensure that IBP does not run off the land application site.

- The slope restrictions in Table 3 must be met for all sites used for land application of IBP.
- Winter application of IBP is restricted to sites with 0-2% slope.

Table 3. Slope restrictions for land application sites.

Slope (%)	Surface application	Injection or Immediate Incorporation
0 - 6	Allowed	Allowed
>6 - 12	Not allowed	Allowed
>12	Not Allowed	Not Allowed

Separation Distances. Separation distances help prevent IBP from moving into surface waters or wetlands. In addition, separation distances and public access controls help prevent the public from coming into contact with the applied IBP.

The separation distances in Table 4 must be maintained on all land application sites.

Step 3a. Additional suitability requirements for pathogen-containing IBP.

Industrial by-products containing pathogens have additional separation distances and site restrictions which must be met. An industrial by-product is assumed to contain pathogens when it contains sewage from sanitary waste facilities, such as sanitary waste that is not separated from industrial flows, or it contains waste streams known or likely to contain pathogens, including wastes containing blood, animal feces and raw meats.

Soil Texture. Soil must have the appropriate texture and structure to physically be able to filter and treat IBP, as well as to facilitate the chemical processes that take place in the soil. The soil texture at the zone of by-product application must be fine sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, sandy clay, silty clay loam, silty clay, or clay.

Depth to Water Table. Restrictions on depth to water table allow IBP to contact soil long enough so that the soil can act as a physical, chemical and biological filter.

- The depth to bedrock must be at least 3 feet, unless the soil is classified as a highly permeable soil, in which case the minimum depth is increased to 5 feet.
- The depth to the seasonal high water table must be at least 3 feet, unless the soil is classified as a highly permeable soil, in which case the minimum depth is increased to 5 feet.

Table 4. Minimum separation distances from the land application site.

Feature		Surface Applied	Incorporated within 48 hours	Injected
Private drinking water supply wells		200	200	200
Public drinking water supply wells		1000	1000	1000
Down gradient lakes, rivers, streams, type 3, 4, and 5 wetlands, intermittent streams, or tile inlets connected to these surface water features[2]	Slope 0 % to 6 %	300	50	50
	Slope 6 % to 12 %	Not Allowed	100	100
	Winter (0 % to 2 %)	600	Not Applicable	Not Applicable
Grassed Water Ways[3]	Slope 0 % to 6 %	100	33	33
	Slope 6 % to 12 %	Not Allowed	33	33

[1] This distance may be reduced with written permission from all persons responsible for residential developments, places of recreation, and all persons inhabiting residence within the designated separation distance.

[2] Intermittent stream means a drainage channel with definable banks that provides for runoff flow to any of the surface waters listed in the above table during snow melt or rainfall events.

[3] Grassed waterways are natural or constructed and seeded to grass as protection against erosion. Separation distances are from the centerline of grassed waterways. For a grassed waterway which is wider than the separation distances required, application is allowed to the edge of the grass strip.

Separation Distances. In addition to the separation distances specified in Table 4, the additional separation distances in Table 5 of must be maintained from the application site.

Crop Restictions/Public Access. Restrictions on crop harvest and public access to land application sites are described in Table 6. If necessary, the area must be posted to ensure these restrictions are being applied.

Table 5. Additional separation distances for IBP containing pathogens.

Separation Distances (feet)			
Feature	Surface Applied	Incorporated within 48 hours	Injected
Residences	200[1] feet	200[1] feet	100 feet
Residential development	600[1] feet	600[1] feet	300 feet
Public contact site	600 feet	600 feet	300 feet
Depth to Bedrock	5[2] feet	5[2] feet	5[2] feet
Depth to Seasonal High Water Table or drain tile[3]	5[2] feet	5[2] feet	5[2] feet

[1]This distance may be reduced with written permission from all persons responsible for residential developments, places of recreation, and all persons inhabiting residence within the designated separation distance.

[2]The separation distance may be decreased to 3 feet if the soil is not classified as a "highly permeable soil", as defined by the MNG960000 permit.

[3]The depth to subsurface drainage tiles shall be considered the depth to the seasonal high water table for sites that are designed according to Natural Resources Conservation Services engineering standards and criteria.

Table 6. Minimum duration between time of application of an industrial by-products containing pathogens and harvest, grazing, and public access to the site.

Crop Types	Waiting Period
Food crops whose harvested part may touch the soil / IBP mixture (melons, squash, tomatoes, etc.)	14 months
Food crops whose harvested parts grow in the soil (potatoes, carrots, etc.)	38[1] months
Feed, other food crops (field corn, sweet corn, etc.) hay, or fiber crop	30 days
Grazing of animals	30 days
Public access to land[2] high potential for exposure low potential for exposure	 1 year 30 days

[1]This can be reduced to a 20 month duration between application and harvest when the IBP is surface applied and stays on the soil surface four months or longer prior to incorporation into the soil.

[2]Lands with high potential for exposure are public contact sites, reclamation sites located in populated areas, turf farms, or plant nurseries. Lands with low potential for exposure are lands with infrequent public use and include areas such as agricultural land, forests, or reclamation sites located in an unpopulated area.

Step 4. Sample the soil at suitable land application site(s) that will be used during the upcoming cropping year (September 1 – August 31).

Soils must be tested for the parameters in Table 7, below, for each site proposed for land application of IBP. Soil sampling is required both before the site is used for the first time, and within 12 months prior to each application, thereafter. If a site is not used during a cropping year, there is no need to sample the soil. A minimum of one composite sample per 40 acres or per site, whichever is greater, is required.

Table 7. Soil analysis requirements and associated limits.

Parameter	Units	Sample Type	Limits
Texture	USDA class	Composite[2]	NA
Organic Matter	Percent	Composite[2]	NA
Phosphorus, Extractable in soil[1]	ppm	Composite[2]	200[1]
Potassium, Exchangeable in Soil	ppm	Composite[2]	NA
pH	Standard units	Composite[2]	NA
Salts, Water Soluble in Soil	mmhos/cm	Composite[2]	4

[1]The soil test method used for extractable phosphorus in soil is either the Bray P-1 test, or the Olson test; the Olson procedure should be used if the soil pH is 7.4 or higher.

[2]The composite shall consist of a mixture of 15-20 sub-samples taken in the plow layer.

Step 5. Notify local authorities at least 30 days before initiating land application in that jurisdiction.

Before land application activities are initiated within a county, city or township for the first time, written notification to local officials -- which includes either the county Planning and Zoning or Solid Waste officer (whichever is appropriate), and either the township clerk or mayor (depending on location of the site) – must be done.

Timing of Notification. Notification must be provided at least 30 days before initiating land application activities. This notification period provides an opportunity for local officials to request additional information (copies of records, testing information, individual site information, etc.), inform the generator of the IBP about any ordinances they must comply with, and inform the generator of the IBP whether future notifications are necessary and if so how, when, and what information to submit.

Content of Notification. Notifications must contain a description of how the IBP will be managed during land application, which includes staging, storage and response actions in the event of a spill, and a response section for the local official. If any changes in the management of the IBP described in the notification occur, the notification process must be repeated.

A sample letter that can be used for notification purposes is included on the MPCA land application web page located at: http://www.pca.state.mn.us/publications/wq-lndapp7-16.pdf.

If a permit is not required for land application activities, the MPCA does not require site notification of sites that will be used for land application of IBP.

Step 6. Determine and calculate the allowable rate of application of the industrial by-product for each suitable site.

The effects of IBP on crops and the environment rely on the ability of the manager of land application activities to accurately calculate the amount of IBP to apply to a particular parcel of land. Inaccurate calculations can lead to the over-application of nitrogen, sodium, metals and other pollutants which can harm the environment. Incorrect calculations can also result in the under-application of these components, which result in a lower-than-expected crop yield.

IBP must be land applied in a manner so as not to exceed the loading limits of this section. Table 8 provides a summary of loading limitations for the application of industrial by-product.

Nitrogen. Annual nitrogen application rates are restricted to what the crop needs during one growing season, based on the Maximum Allowable Nitrogen Application Rate (MANA) – which is set by recommendations from the University of Minnesota Extension Service. These recommendations are based on soil test results, realistic crop yield goals, and previously grown crops. This information is available from the MPCA or your extension agent.

Sodium. Application rates of sodium are limited to 170 pounds per acre in any one cropping year.

To calculate the maximum allowable rate of the IBP to meet the nitrogen and sodium limits, use the electronic Application Rate Calculator included on the MPCA land application web page located at: http://www.pca.state.mn.us/water/landapp.html.

Hydraulic Limitations. Hydraulic loading rates are set for liquid IBP to prevent ponding and runoff at land application sites. The rates vary based on the ability of the soil to drain the hydraulic volume, but do not supersede the nutrient loading rates. That is, hydraulic limits cannot be used to exceed other application rate limits for nutrients or metals.

Table 8. Summary of application rate limits.

Loading Factor	Limit
Nitrogen	Varies - MANA (lb/acre/year)
Sodium	170 lb/acre/year
Daily Hydraulic Rate[1]:	
Soil Texture Fine	10,000 gal/acre/day
Soil Texture Medium	15,000 gal/acre/day
Soil Texture Coarse	25,000 gal/acre/day
Winter Hydraulic Rate	15,000 gal/acre/winter

[1] Fine, medium, and coarse textured soils are defined by the Department of Agriculture (USDA) textural classifications as [clay loam, silty clay loam, sandy clay, silty clay]; [loam, silt, silt loam, and sandy clay loam]; and [sand, loamy sand, and sandy loam, respectively].

Step 7. Follow general provisions for land applying IBPs.

There are some general provisions that must be followed when land applying IBP to prevent nutrients from washing off the land (to surface water) or through the soil profile (to ground water), thereby avoiding contamination of ground and/or surface waters.

- An industrial by-product must be immediately incorporated or injected on sites that are prone to flooding.
- Application of IBP is not allowed on areas of a site ponded with water or liquid IBP.
- Application of IBP is not allowed on areas that remain fallow for the entire cropping year.
- Liquid IBP must be injected or incorporated within 48 hours when applied on soil with a surface horizon permeability rate of less than 0.2 inches/hour.
- IBP must not be applied by spraying from public roads or across road right of ways without prior written MPCA approval.
- The application area must be clearly identified with flags, stakes, or other easily seen markers at the time of application to identify the site boundaries, separation distances, and unsuitable application areas within the site. Where site boundaries can be identified by field roads, fences, etc., identification is not necessary.

- IBP must be uniformly distributed over the application area at the site used for land application.
- Runoff of IBP from the application site is not allowed.
- Significant surface ponding of liquid IBP is not allowed within 6 hours of the application.

These may not be the only measures necessary to prevent runoff of the material during the Spring thaw. Management tools such as installation of silt fences and berms, and planting of grass buffer strips may be required in order to meet the requirement that no runoff of the industrial by-product from the application site is allowed.

Step 8. Provide information to the end user, if other than yourself.

For each site used for land application of an IBP, the end user – if other than yourself -- must be provided with the information necessary to ensure that – collectively, from all nutrient sources -- a site is not receiving too many nutrients. An "end user" is the person that has accepted the IBP for their use as a soil amendment – usually a farmer.

Information the end user will need includes information such as actual nutrient application rates, any restrictions on the IBP use, crop restrictions, etc. The end user must be provided with this information in writing as soon as possible, and in no case more than 6 weeks after application has been completed. End users should take appropriate credits for all plant nutrients supplied by industrial and municipal by-products, manures, and fertilizers so that maximum allowable application rates are not exceeded.

Step 9. Record site information and application loadings to each suitable site.

The following records must be maintained at the Facility for a minimum of three years after the land application activity:

- A copy of the Notification form submitted to the MPCA for land application activities.
- A copy of any notification letter submitted to local authorities (county and city/township).
- A copy of any lab results and other analytical information pertaining to the industrial by-product land applied or soil information at sites used for land application.
- Documentation of the site suitability determination made in compliance with this guidance, for each site being used for land application activity.
- Documentation of the loading calculations indicating the maximum allowable IBP application rate for each site being used during the current cropping year.
- A listing of all other industrial or municipal by-product, manures, septage, and fertilizers applied on the same site and their rates of application.
- Daily hauling records which indicate quantities transferred to storage or land applied with the storage or site location identified.
- A running total of the quantity of IBP applied on each site for the given cropping year.
- A copy of written information provided to each end user of the IBP.

Records must be made available for review upon request by the MPCA. The retention period for these records can be extended by the MPCA in the event of permitting or compliance issued that need to be addressed.

Step 10. Contact MPCA staff to answer your questions and provide assistance related to the management of your IBP.

Additional information is available to help you properly manage your IBP.

Refer to the MPCA companion document to this fact sheet for detailed information on these steps and additional land application topics: "Guidelines for Managing Industrial By-Products from Food and Beverage Processing Industries (wq-lndapp2-03)". An electronic version of this and other documents referenced in this fact sheet, as well as land application forms, are available at the MPCA land application web page located at: http://www.pca.state.mn.us/water/land appl.html.

If you have questions or need assistance with the use of this document, refer to the contacts list at the beginning of this fact sheet, or contact the MPCA's Customer Assistance Center at: 800-646-6247 (outstate) or 651-297-2274 (metro area).

Minnesota Administrative Rules

7035.2860 BENEFICIAL USE OF SOLID WASTE.

Subpart 1. **Applicability.** This part establishes a procedure for determining when use of a material classified as a solid waste is a beneficial use. The uses listed in subpart 4 as standing beneficial use determinations have been reviewed and determined to be beneficial uses of solid waste by the agency. All other proposed uses of solid wastes must obtain case-specific beneficial use determinations in accordance with the procedures in subpart 5. The following exemptions are provided:

A. Beneficial uses authorized to occur by an agency permit or legally binding document issued prior to March 15, 2004, are exempt from this part. Upon expiration of the authorization, the procedure for obtaining a case-specific beneficial use determination in subpart 5 must be followed.

B. Recyclable materials recycled in accordance with part 7035.2845 and Minnesota Statutes, section 115A.03, subdivision 25, are exempt from this part.

C. Recyclable materials that are not exempt under item B are exempt from the requirement to obtain a case-specific beneficial use determination under subpart 5 when they are incorporated into a manufactured product as defined by part 7035.0300, subpart 62a.

D. Composts that are used in accordance with the standards contained in part 7035.2836 are exempt from this part.

Subp. 2. **Beneficial use standards.** To constitute a beneficial use under this part, the following standards must be met:

A. the solid waste must not be stored in anticipation of speculative future markets;

B. the solid waste must be adequately characterized in accordance with part 7035.2861;

C. the solid waste must be an effective substitute for an analogous material or a necessary ingredient in a new product;

D. the use of the solid waste does not adversely impact human health or the environment; and

E. the solid waste must not be used in quantities that exceed accepted engineering or commercial standards. Excess use of solid waste is not authorized by this part and is considered disposal.

Subp. 3. **Regulatory exemption.** Unless specified otherwise by the agency in a beneficial use determination or permit, a material remains a solid waste until it is incorporated into a manufactured product or utilized in accordance with a standing or a case-specific beneficial use determination. Until the time this regulatory exemption occurs, the material must be stored in compliance with part 7035.2855 and managed as a solid waste in accordance with this chapter.

Subp. 4. **Standing beneficial use determinations.** A standing beneficial use determination means that the generator or end user of a material can do so in accordance with this subpart without contacting the agency. Only those specific solid wastes and the uses designated in items A to Q have been given standing beneficial use determinations. Any other uses of the solid waste are not authorized and must follow the procedure outlined in subpart 5.

A. Unadulterated wood, wood chips, bark, or sawdust when these materials are used as mulch, landscaping, animal bedding, erosion control, wood fuel production, a bulking agent at a compost facility operated in compliance with part 7035.2836, or as a substitute for wood.

B. Unadulterated newspaper and newsprint when used as animal bedding, insulation, or as a substitute for paper products.

C. Uncontaminated glass when used as a sandblast agent.

D. Unusable latex paints, characterized as high solid content, off-specification colors, sour, frozen, or poor quality, when used to produce processed latex pigment for use as an additive for the production of ASTM-specified specialty cement.

E. Reclaimed glass and porcelain fixtures when used as a substitute for conventional aggregate or subgrade applications in accordance with Minnesota Department of Transportation Standard Specifications for Construction 2000 Edition, 3138.2 A2.

F. Crumb rubber when used in asphalt paving or applications where it is used as a substitute for rubber or similar elastic material.

G. Tire shreds when used as lightweight fill in the construction of public roads in accordance with Minnesota Statutes, section 115A.912, subdivision 4.

H. Tire chips when used as a substitute for conventional aggregate in construction applications when the ratio of this substitution is no greater than one to one by volume. This does not include use of tire chips as general construction fill or clean fill.

I. Uncontaminated recognizable concrete, recycled concrete and concrete products, and brick when used for service as a substitute for conventional aggregate.

J. Salvaged bituminous when used as a substitute for conventional aggregate in accordance with Minnesota Department of Transportation Standard Specifications for Construction 2000 Edition, 3138.2 A2.

K. Coal combustion slag when used as a component in manufactured products such as roofing shingles, ceiling tiles, or asphalt products.

L. Coal combustion slag when used as a sand blast abrasive.

M. Coal combustion fly ash as defined by ASTM C 618 when used as a pozzolan or cement replacement in the formation of high-strength concrete.

N. Coal combustion fly ash or coal combustion gas scrubbing by-products when used as an ingredient for production of aggregate that will be used in concrete or concrete products. This does not include use in flowable fill.

O. Foundry sand when used as a feed material for the manufacture of Portland cement.

P. Uncontaminated by-product limes when used as agricultural liming materials and distributed in accordance with chapter 1508 and Minnesota Statutes, sections 18C.531 to 18C.575. Application rates for by-product limes must be based on the lime recommendations of the University of Minnesota Extension Service and cannot cause the soil pH to exceed 7.1 after application. Site-specific application rates for by-product lime must be determined by an individual that has a background and understanding of crop nutrient management such as a crop consultant or University of Minnesota Extension Specialist. Recommended rates for lime can be obtained from the University of Minnesota Extension Service publication "Fertilizer Recommendations for Agronomic Crops in Minnesota" BU-06240-S, and the Minnesota Department of Agriculture publication "Ag-Lime Recommendations in Pounds ENP per acre" available on their Web site at http://www.mda.state.mn.us/lime.

Q. Manufactured shingle scrap and ground tear-off shingle scrap when used in asphalt pavement or road subbases.

Subp. 5. **Case-specific beneficial use determinations.** For uses of a solid waste not identified in subpart 4, the agency shall make a case-by-case determination on whether the proposed management option for the specific solid waste is a beneficial use. This determination must be based on information submitted in accordance with this subpart. In cases where the information required by this subpart is not available, a demonstration/research project designed to provide the missing information may be proposed in accordance with part 7035.0450. Unless

otherwise directed by the agency, proposals must include the following information at a minimum:

A. a description of the solid waste, manner in which it is generated, quantity generated, quantity to be utilized, and its proposed end use;

B. results of chemical and physical characterization of the solid waste done in accordance with part 7035.2861;

C. an evaluation of the human health and environmental impacts the proposed use may have and a comparison of these impacts with those from other management alternatives for the solid waste;

D. verification that the end product complies with industry standards and specifications for its intended use and a comparison of the chemical and physical characteristics of the solid waste proposed for use with the material it will replace;

E. a description of the routine sampling and analysis that will be conducted of the solid waste to ensure that the information submitted for review is representative and the solid waste has consistent characteristics. The description must include the procedure and frequency of sampling and analysis, parameters to be analyzed, analysis methods, and laboratory reporting limits to be used;

F. a copy of a contract to purchase or use the proposed product or other documentation proving that a market for the proposed product or use exists;

G. a detailed description of how and where the product will be distributed. This should also include a detailed description of how the solid waste will be managed from the time it is generated until the time it will be utilized and the management practices that will be in place to ensure that human health and the environment are protected;

H. the following information related to the management of solid waste stored prior to its use:

(1) a complete description of the types of storage to be used prior to beneficial use; and

(2) a description of how the solid waste will be managed to meet the requirements in part 7035.2855;

I. a description of any wastes that will need to be managed as a result of beneficially using the solid waste;

J. verification that local units of government with authority to regulate the proposed process or use of the solid waste have received a copy of this application and have been provided information on who to contact at the agency to provide comments on the proposed beneficial use activity; and

K. a proposal for notification of interested or affected parties. The agency shall review this proposal and make a determination on the appropriate notification procedures.

Subp. 6. **Agency actions.** Upon completing review of the information submitted under subpart 5, the commissioner will take one of the following actions:

A. request additional information for evaluation of the proposal;

B. notify the proposer in writing, that a beneficial use determination has been made and the commissioner agrees the proposed use of the solid waste is beneficial. If the determination is conditional, the notification must include the conditions; or

C. deny the request for a case-specific beneficial use determination.

If the request is denied, the proposer must obtain a permit or variance before the solid waste can be managed in the manner proposed. If a permit is required, the type of permit issued may be a state disposal system or a solid waste management facility permit depending on the type of environmental concerns that need to be addressed by the permit.

Subp. 7. **Reporting requirements.** Proposers that have applied for and received case-specific beneficial use determinations according to subpart 5 must submit a report to the county in which the solid waste is generated annually by January 31. The report must contain a description of the type and quantity of solid waste beneficially used during the time period from January 1 to December 31 of the previous year. The Minnesota Pollution Control Agency will provide a format for submitting this report.

Subp. 8. **Modification of a beneficial use determination.** The commissioner may modify conditions attached to any beneficial use determination made under subpart 5 if the commissioner finds, on the basis of new information, that new conditions are necessary to protect human health and the environment.

Subp. 9. **Revocation of a beneficial use determination.** The commissioner may revoke any beneficial use determination made under subpart 5 if the commissioner finds, on the basis of new information, the standards in subpart 2 are not being met. If the commissioner revokes a beneficial use determination, use of the solid waste can only continue if authorized by a permit and/or a variance is obtained. The commissioner shall provide a reasonable amount of time for the proposer to apply for a permit or variance or to terminate the regulated activity.

Subp. 10. **Public information.** The agency shall post all case-specific beneficial use determinations made by the agency on its Web site.

Statutory Authority: *MS s* 116.07

History: 28 SR 1086; *L 2005 1Sp1 art 2 s 161*

Posted: *September 7, 2006*

Minnesota Administrative Rules

7035.2861 CHARACTERIZING SOLID WASTES FOR DEMONSTRATION/RESEARCH PROJECTS AND FOR BENEFICIAL USE.

Subpart 1. **Scope.** This part sets out the procedures for characterization of a solid waste. The agency shall use the results from characterization of a solid waste when evaluating demonstration/research projects and beneficial use proposals.

Subp. 2. **Characterization procedures.** Unless otherwise directed by the agency, a person seeking to characterize a solid waste must follow the steps in items A through C.

A. The solid waste must be evaluated to determine if it is hazardous as provided in part 7045.0214. If the waste is determined to be hazardous, no further characterization is necessary because under this chapter no demonstration/research project or beneficial use determination will apply to hazardous waste.

B. A list of potential chemical constituents present in the solid waste must be developed by evaluation of the processes at the facility that resulted in production of the waste; and review of material safety data sheets, ingredient labels, and other pertinent information.

C. The solid waste must be analyzed in accordance with the methods provided in subpart 3, to provide the following information on its chemical and physical properties:

(1) potential chemical constituents identified in item B; and

(2) physical properties that affect the use or management of the solid waste.

Subp. 3. **Methods of analysis.** The analysis methods used for characterization must be consistent with the management option or beneficial use being proposed. In most cases, total compositional analysis is needed. Depending on how the solid waste will be managed prior to its beneficial use, leaching procedures may also be required. Approved methods of analysis are found in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA Publication SW-846. Equivalent analytical methods may be allowed with commissioner approval.

Statutory Authority: *MS s* 116.07

History: 28 SR 1086

Posted: *September 7, 2006*

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Notification to Land Apply IBP without a Permit

Industrial By-Product (IBP)

Doc Type: Permit Evaluation

Instructions: In most cases, land application of less than 50,000 gallons or 10 dry tons per year of Industrial By-Product (IBP) can be done without a Minnesota Pollution Control Agency (MPCA) permit. Complete and submit this Notification for MPCA review at least 30 days prior to initiation of land application activities. If the MPCA concurs with your determination that a permit is not required, ***a formal response will not be sent***. In addition to Notification, IBPs must be land applied in accordance with the MPCA document, "Guidelines for Managing Industrial By-Products from Food and Beverage Processing Industries" (wq-lndapp2-03, 1/08).

Mail completed notification form to: Water Quality Submittals Center at the address above.

Facility Information

1. ☐ **Facility owner:** ☐ and/or Operator (Public entity, city, or business firm legally responsible for facility operation) [see Minn. R. 7001.0050]

   Facility name: _____ Type of ownership: ☐ Public ☐ Private

   Mailing address: _____

   City: _____ State: _____ Zip code: _____

   Phone: _____ Fax: _____ E-mail: _____

2. **Facility location:** No post office boxes allowed. Actual physical location where IBP is generated (use actual street, highway address, or section/township/range coordinates).

   Location address: _____

   Facility is located in _____ quarter of the _____ quarter of section _____ township _____

   of _____ County. Township # _____ Range # _____ ☐ East ☐ West

   City: _____ State: _____ Zip code: _____

   Is the facility located on tribal land? ☐ Yes ☐ No If yes, apply to EPA Region V, John Coletti at 312-886-6106.

3. **Land applier information** (information about person, septic pumper, farmer, or Type IV operator land applying IBP)

   Name of person, firm, or organization: _____

   Mailing address: _____

   City: _____ State: _____ Zip code: _____

   Class IV Certification Number: _____ Phone: _____

Industrial By-Product Information

4. **Amount of IBP generated annually:** _____ ☐ gallons ☐ dry ☐ tons ☐ cubic yards (check one)

5. **Description of IBP.** Describe the process(es) resulting in the IBP proposed to be land applied. Describe the physical and chemical characteristics of the IBP and your proposal for land application.

   _____

   _____

   _____

6. **Is the IBP a hazardous waste?** ☐ Yes ☐ No

7. **Does this IBP contain sewage from sanitary waste?** ☐ Yes ☐ No

8. **Does this IBP contain other substances likely to contain pathogens (blood, meat, fish, poultry, eggs, etc)?** ☐ Yes ☐ No

9. **Is this material odorous or attract vectors such as rodents, birds, flies, etc. when stored or land applied?** ☐ Yes ☐ No

If yes to any of questions 6-9, explain any treatment or management that will be used to control these problems:

10. **Testing of IBP.** Complete the following table with analytical results from a sample which is representative of the IBP that will be land applied. The following are baseline analytes that must be analyzed once in each IBP to be land applied, unless the nature of the IBP changes significantly. Attach lab sheets for all analytical data.

    Note: *If the facility is a vehicle wash, use the analyte list located in the "Land Application of Manual Vehicle Wash Wastewater." Facilities not in the food or beverage industry must contact the MPCA to determine appropriate sampling parameters.*

    IBP from the **Food and Beverage Industries** should be sampled for the parameters below.

Analyte	Date of analysis	Reporting unit[1]	Results
Total Solids		Percent	
Total Volatile Solids		Percent	
pH		SU	
Total Chloride		mg/kg	
Total Kjeldahl Nitrogen		Percent	
Total Ammonia Nitrogen		Percent	
Total Phosphorus		Percent	
Total Sodium		mg/kg	
Other[2]			

[1] Reported on dry weight basis for all parameters other than pH.

[2] If other contaminants (metals, Volatile Organic Compounds Polychlorinated Biphenyls, etc) are present in the IBP not included here, include the analysis results with the permit application. Contact MPCA for assistance in making this determination.

SU = standard units mg = milligrams kilograms = kg

11. **During which months are IBPs land applied?** (check all that apply)

    ☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec

12. **Frequency of IBP land application:** (i.e., daily, 1X/week, 2X/year, etc.)

13. **Describe the methods and equipment used for application:**

14. **What options for management does your facility have during bad weather or when field access is restricted?**

15. **What do you anticipate your storage needs to be:** _____ **Days** _____ **Volume.**

16. **Do you store dewatered IBPs in the field prior to land application?** ☐ Yes ☐ No

    If yes, indicate the length of time IBPs may be stored in the field: _____ days

17. **Do you transfer any wastes to off-site storage structures used to store manure?** ☐ Yes ☐ No

18. **Indicate the type of storage (lagoon, tank, etc.) and describe the liner characteristics:**

Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person, or persons, who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Print name: _____ Title: _____

Signature: _____ Date: _____

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Industrial Land Application of Industrial By-Product Application

SDS Permit Program

Doc Type: Permit Application

Instructions on Page 4

The State Disposal System (SDS) Permit Program regulates wastewater discharges to land. This application applies to facilities that land apply Type IV industrial by-products. Any other discharge types will require a different permit application.

Complete the application by typing or printing in black ink. Attach additional sheets as necessary. For more information, please contact the Minnesota Pollution Control Agency (MPCA) at: In Metro Area: 651-296-6300 or Outside Metro Area: 800-657-3864.

Permittee name: _____ **Permit number:** MN _____

Basic Information

1. **Industrial by-product description** | **Total quantity land applied per year** (complete as applicable)

	Dry tons	Cubic yards	Gallons

2. Describe the processes resulting in the industrial by-product(s). Describe the physical and chemical characteristics of the industrial by-product(s).

Industrial By-Product Characterization

Complete this section for each industrial by-product land applied, attach additional sheets as needed.

3. Industrial By-Product Description: _____
   a. Is the industrial by-product a hazardous waste? ☐ Yes ☐ No
   b. Does the industrial by-product contain sewage from sanitary waste? ☐ Yes ☐ No
   c. Does the industrial by-product contain other substances likely to contain pathogens (blood, meat, fish, poultry, eggs, etc)? ☐ Yes ☐ No
   d. Is the industrial by-product odorous or attract vectors such as rodents, birds, flies, etc. when stored or land applied? ☐ Yes ☐ No If yes, explain any treatment or management that will be used to control these problems:

4. Select the factor that application rates are based on:
   - ☐ Nitrogen
   - ☐ Sodium
   - ☐ Hydraulic loading
   - ☐ Others (specify): _____

5. Describe how any of the above factors affect your application rates:

   _____

   _____

   _____

   _____

6. The minimum acreage needed for land application of this industrial by-product: _____ acres

7. The following table contains the most common analytes which may be present in your industrial by-product. Complete the table with analytical results from a sample which is representative of the industrial by-product that will be land applied. If you can provide information about your process or past testing results that show the analyte is not likely to be present or is present at concentrations below environmental concern, the analyte need not be tested for. This can be indicated by placing a check in the column labeled "Not Required". Attach lab sheets for all analytical data.

Analyte	Not Required	Date of Analysis	Result	Reporting Unit[1]
Total Solids	☐			Percent
Total Volatile Solids	☐			Percent
pH	☐			SU
Total Arsenic	☐			mg/kg
Total Boron	☐			mg/kg
Total Cadmium	☐			mg/kg
Total Carbon	☐			mg/kg
Total Calcium	☐			mg/kg
Total Chloride	☐			mg/kg
Total Cobalt	☐			mg/kg1
Total Copper	☐			mg/kg
Total Iron	☐			mg/kg
Total Lead	☐			mg/kg
Total Magnesium	☐			mg/kg
Total Manganese	☐			mg/kg
Total Mercury	☐			mg/kg
Total Molybdenum	☐			mg/kg
Total Nickel	☐			mg/kg
Oil and Grease	☐			mg/kg
Total Kjeldahl Nitrogen	☐			Percent
Total Ammonia Nitrogen	☐			Percent
Total Nitrate Nitrogen	☐			Percent
Total Phosphorus	☐			Percent
Total Potassium	☐			Percent
Total Selenium	☐			mg/kg
Total Sodium	☐			mg/kg
Total Sulfur	☐			mg/kg
Surfactants	☐			mg/kg
Total Zinc	☐			mg/kg
Total Polychlorinated Biphenyls	☐			mg/kg
2,3,7,8-tetrachlorodibenzo-p-dioxin	☐			ppt
2,3,7,8-tetrachlorodibenzo-p-furan	☐			ppt
other[2]	☐			

[1] Reported on dry weight basis for all parameters other than pH.

[2] If other contaminants are present in the industrial by-product not included here, include the analysis results with the permit application. Contact the MPCA for assistance in making this determination.

Industrial By-Product Characterization

8. During which months are industrial by-products land applied (check all that apply)?
   ☐ Jan ☐ Feb ☐ Mar ☐ April ☐ May ☐ June ☐ July ☐ Aug ☐ Sept ☐ Oct ☐ Nov ☐ Dec
9. Frequency of industrial by-product land application (i.e. daily, 1 x week, 2 x year, etc.):

   _____
10. What options for management does your facility have during inclement weather or when field access is restricted?

    _____

    _____

    _____
11. Describe the methods and equipment used for application:

    _____

    _____

    _____
12. If you are utilizing unique or alternative methods and standards for land application you must provide a management plan and information supporting that the proposed management will be protective of the environment and how this was determined.

Storage

13. Do you store industrial by-products prior to land application? ☐ Yes ☐ No **If yes, complete this section.**
14. Do you store dewatered industrial by-products in the field prior to land application? ☐ Yes ☐ No

    If yes, indicate the length of time industrial by-products are stored in the field: _____
15. Describe the type of storage structure (lagoon, tank, etc.) and include the liner characteristics:

    _____

    _____
16. Total storage capacity (cubic yards or gallons): _____ Maximum storage time: _____ days
17. Is this storage facility currently permitted by the MPCA? ☐ Yes ☐ No

    If yes, indicate the permit number and attach any written approvals authorizing use of the storage structure by MPCA:

    _____
18. Provide the information below on the storage location and attach a topographic map of the storage facility.

    Street address: _____ County: _____

    City/Township: _____ State: _____ Zip code: _____

Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T N	R ☐ E ☐ W			

19. List all industrial by-products and/or other materials stored in this structure:

Material	Quantity/Year

Review the application and ensure all requested items are submitted with this application.

Please make a copy for your records.

Refer to the *Transmittal Form* for mailing instructions.