

Beneficial Use



KDHE Works Conference

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Overview

- Statute 65-3409(a)(1)(A)
- Land application of Byproducts without a permit:
 - Typical land application materials
 - Materials that do not need approval from BWM (Overlap with other divisions - KDA, BOW)
 - Materials that we have rejected in the past
- Beneficial use of Industrial Byproducts
- Items that are considered 'uncontaminated soil' and not regulated:
 - Sediment removal from channels, storm sewers, or ponds (dredging)
 - Drill Cuttings from water wells, or horizontal drilling for utilities
 - Mud trap waste from commercial facilities
- Beneficial use of waste tires (addressed in statutes and regulations)
- Questions?

Regulatory Requirements

Statute 65-3409(a)(1)(A): It shall be unlawful for any person to dispose of any solid waste by open dumping, but this provision shall not prohibit the use of solid waste (except waste tires) in normal farming operations or in the processing or manufacturing of other products in a manner that will not create a **public nuisance** or **adversely affect the public health or environment**.

Beneficial use is not further defined in the regulations.

The beneficial use application forms are available online:

- Application to land apply industrial byproducts
- Application for the beneficial use of industrial byproducts

KDHE does not issue a permit for beneficial use, but provides approval of the beneficial use in writing.

Beneficial use approval

Approval letters for land application typically state

“Materials that have shown to have qualities that are beneficial to crops are not considered a solid waste if applied at agronomic rates”

For beneficial use of industrial byproducts, the statement is similar...” Based upon the application submittals, KDHE BWM has determined that the proposed beneficial use will not be considered as a disposal”

Land Applications of Byproducts without a Permit

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Description of Beneficial Use for Land Application

- When a waste is to be used beneficially it must have chemical or physical properties similar to the raw material it is replacing (fertilizer).
- When incorporated into another product, its use must have some enhancing qualities to the final product (tilth).

The Application to Land Apply Industrial Byproducts requires:

- Facility and applicant information
- Land application site information
 - Property owner
 - Site description
- Byproduct information
 - Amount
 - Type of industrial byproduct
 - Byproduct/wastewater lab analysis
- Signature from a professional agronomist/engineer certifying the soil tests and the calculated agronomic rate
- Application operation plan, including:
 - Background information
 - Maps
 - Site preparation
 - Agronomic rate calculations
 - Land application procedure
 - Contingency plan
- Land application property owner consent form

Attachment A

Wastewater/Byproduct Analysis

A representative sample of the waste material must be analyzed for the following list of constituents. All concentrations must be reported on a dry weight basis, and the lab report should be submitted in full. Although not required yet, it is recommended that the byproduct be tested on a monthly basis so that application rates can be adjusted to accommodate changes in the byproduct composition throughout the year.

% Moisture	
Arsenic	mg/kg
Barium	mg/kg
Cadmium	mg/kg
Calcium	mg/kg
Chlorides	mg/kg
Chromium	mg/kg
Copper	mg/kg
Electrical conductivity	mmhos/cm
Iron	mg/kg
Lead	mg/kg
Magnesium	mg/kg
Manganese	mg/kg
Mercury	mg/kg
Molybdenum	mg/kg
Nickel	mg/kg
Oil and grease	mg/kg
Ammonia as (N)	mg/kg
Nitrate as (N)	mg/kg
Nitrite	mg/kg
Total organic nitrogen	mg/kg
Total inorganic nitrogen	mg/kg
Total Kjeldahl Nitrogen (TKN)	mg/kg
Total Chlorides	mg/kg
pH	pH Units
Total Phosphorus as (P)	mg/kg
Potassium	mg/kg
Selenium	mg/kg
Silver	mg/kg
Sodium	mg/kg
Total Solids	%
Total Volatile Solids	%
Sulfur	mg/kg
Zinc	mg/kg

Typical conditions of approval

- The site is open for periodic inspections by KDHE.
- The use of the byproduct is limited to the sites identified.
- The agronomic rate will not be exceeded.
- The department may observe application procedures to validate application rates.
- If the soil is frozen or saturated, no material may be applied.
- An annual report is required.
- The approval is limited to a certain time, and can be renewed upon request.

Kansas statute prohibits land application if it creates a public nuisance or adversely affects the public health. If there is a complaint or a concern that either of these have occurred, land application may be required to cease.

Typical Land Application Materials

- Lime residuals from water treatment plants
 - Lime residuals does not require a beneficial use application UNLESS there is storage **off-site** for drying prior to field application.
 - Since lime residuals are a direct substitute for agricultural lime, no laboratory analysis is required.
 - We don't require that the applicant reports the location of the various field applications; therefore, the application does not include receiving soil analysis or agronomic rate calculations.
- Gypsum
 - Has two common sources:
 - Wallboard typically from LEED certified construction
 - Westar/Jeffery Energy – synthetic scrubber solution referred to as “flue gas desulfurization (fgd)”
 - Land application rates vary based upon the crop, and receiving soil test; therefore, a record of the of the land application area and rates must be maintained.

Typical Land Application Materials

- Ethanol plant sludge – Ethanol is commercially produced by fermentation of grain. The sludge can be land applied.
 - Receiving soil analysis typically includes pH, Cation Exchange Capacity, and background fertility levels.
 - An agronomic rate is calculated for the crop
 - Residual is incorporated
- Food production –
 - to be applied at agronomic rates
 - Must be incorporated to prevent vectors
 - Examples:
 - Out of spec egg nog
 - Cooked potatoes contaminated with anhydrous ammonia
 - Wastewater sludge from dissolved air flotation (DAF) treatment of process water used in making pet food.
 - Liquid sludge from DAF wastewater treatment at pizza manufacturing plant.

Land application materials That don't require BWM's approval

- Fertilizers sold as a product
 - If KDA has an application for marketing fertilizer that is a byproduct that is waste related, KDA includes BWM for a concurrent review and approval to prevent disposal.
- Sewage sludge – 40 CFR 503, “Standards for the Use or Disposal of Sewage Sludge.” This is regulated by Bureau of Water (BOW); BOW may defer to EPA Region 7.
- “Waste of domestic animals” – see KSA 65-3402(a)
- Washwater (typically used as irrigation) is typically management by Bureau of Water
- Spoiled grain – land application is listed as a in technical guidance SW-1998-G6 as a method of using spoiled grain. A formal written application is not required. Application rate of up to 1 ton per acre. Higher application rates must be coordinated with the KSU Dept of Agronomy
- Materials that are defined as “clean rubble” or “uncontaminated soil.”
- Commercial mud waste traps (TGD SW 1994 G3).

Land application materials

That have been rejected/discouraged

- Wood waste (small pieces) proposed to be placed on an agricultural field.
- Animal waste from carnivores (the waste contains pathogens)
- Any land application that is misapplied and leads to runoff
 - Whey from a cheese plant
 - Blood from meat packing plant
- Any land application that creates a nuisance

Beneficial use of industrial byproducts

If a waste from an industrial process can constitute an effective substitute for an analogous raw material, then it is considered a byproduct. The use will not be considered illegal disposal of waste.

Examples of byproducts beneficial use

- Lime residuals are used for stabilization of a pad or subbase
- Spent sand blast media to be used within concrete
- Spent garnet sand used in place of sand below concrete pad
- Fly ash to stabilize sink holes on-site
- Cement kiln bag house dust used for public road stabilization
- Foundry Sand - backfill

The Application for the Beneficial Use of Industrial Byproducts requires:

- Facility and applicant information
- Byproduct information
 - Amount
 - Type of industrial byproduct
 - List of potential concerns
 - Byproduct lab analysis
- Beneficial Use Plan
 - Background information (including storage information)
 - Byproduct Preparation
 - Proposed Use
 - Contingency plan
 - Surface water controls (if applicable)

Typical testing parameters

- Total organics/metals for general material characterization and risk evaluation
- TCLP to determine if it is a hazardous waste
- SPLP for simulating atmospheric exposure in evaluating risk

Typical approval conditions

- Limited to the amount and type of waste listed in the application
- Limited to the beneficial use described in the application
- Limit to the waste stockpile volume and storage time.
- A completion report is required. If the project lasts more than a year, an annual progress report is required.

Compliance and enforcement if

- Non-compliance with terms and conditions of approval.
- Improper storage
- Falsification of records

If a byproduct's use is common and is sold as a product, it is not considered a waste and does not need approval. Some examples are:

- Fly ash used for sub-base of public roads.
- Coal slag from a power plant is used to make sand blast media.

Items considered 'uncontaminated soil' and are not regulated.

Uncontaminated soil

- KSA 65-3407(a) states that a permit is not necessary for clean rubble disposal
- As per KSA 65-3402 defines clean rubble as a type of construction and demolition waste.
“Uncontaminated soil” is a subset of “clean rubble.”
- Within the Construction/Demolition Landfills section of the Solid Waste regulations is a description of uncontaminated soils (KAR 28-29-501)

“Uncontaminated Soil” that is not regulated by BWM

- Dredging of farm ponds or residential/commercial detention ponds.
- Drill cuttings from water well construction.
- Drill cuttings from utility horizontal drilling (i.e. water lines, natural gas lines, etc.)
- Sediment removal from channels or storm sewers.

Land Application of Mud Trap Waste

- Mud trap wastes - commercial
 - Examples - Car wash, auto sales car wash, washing mud off of equipment outside of a repair shop (applies to KDOT also)
 - Beneficial use application form is not necessary, however, it requires district office approval.
 - No testing necessary
- Mud trap wastes – industrial
 - Mud/oil traps in repair shops (including KDOT facilities) is considered industrial waste
 - Requires lab analysis for characterization of the waste
 - Sampling frequency
 - Records of where the mud is placed – cannot use the same site repeatedly
 - Requires district office approval



Mud Trap Wastes

Technical Guidance Document SW-1994-G3

Most car wash facilities in Kansas have mud traps at the point car wash water drains into sewer systems. The purpose of a mud trap is to settle out mud, sand and grit washed from cars so that it does not plug sewers. While petroleum-based products can also make their way into the traps, experience has shown that this material is generally inert and has minimal potential for negative health or environmental impact. Therefore, this material is considered a non-hazardous waste by definition and no analytical testing of this material is required prior to re-use or disposal.

Other businesses also have mud traps at their facilities. Most of the facilities are related to engine repair. Some of the types of facilities that utilize mud traps include auto repair shops, truck washes, radiator repair shops, agriculture equipment repair shops, service stations, and stationary engine repair shops. Due to the nature of the activity at these types of facilities, the waste in their mud traps often contains high concentrations of petroleum products and/or heavy metals. Analytical results have shown that some of these "muds" are classified as hazardous wastes due to the concentrations of petroleum products or heavy metals. Therefore, these muds must be addressed with more caution than car wash mud. A part of this precautionary care includes analytical testing to prove the mud is not a hazardous waste. The testing requirements will vary depending on the type of business served.

Regardless of the source of the mud, it must be dry enough to pass a paint filter test (EPA method SW-846/9095), and be a non-hazardous waste if it is to be disposed *in* a municipal solid waste landfill (MSWLF) subject to federal and state solid waste regulations. For our purposes, "wet material" refers to mud that does not pass the paint filter test, while "dry material" refers to mud that does pass the paint filter test.

The requirement for mud trap waste to pass the paint filter test has presented problems to many companies that remove and dispose the mud with vacuum trucks because vacuum truck operators *add* water to the mud traps in order to make the material more pumpable. As a result of this *process*, the mud typically fails the paint filter test, and is considered a bulk liquid. This material must be dried to make it acceptable for disposal in a MSWLF.

For companies using "dry" removal methods, such as shoveling or removal with a clam shell, the remaining mud usually passes the paint filter test, or will pass the paint filter test with minimal air drying. The solid material can

Section. A disposal authorization is required to dispose special, non-domestic/non-commercial types of waste in a MSWLF. A disposal authorization can be obtained by calling (785) 296-1120 or 296-1600, or by writing BWM at the address on the top of this document. At the end of the address block, please add the following words:

ATTN: Disposal Authorization

The information required in the disposal authorization request includes the type and quantity of waste to be disposed, results of any laboratory analyses required by KDHE, and the MSWLF proposed for the disposal. Please note, however, the MSWLF operator at the proposed MSWLF has the option of accepting or refusing the mud regardless of KDHE's issuance of a disposal authorization.

The acceptable methods for disposal of muds are given in order of preference on the following page. Please note: 1) some of the methods may be suitable on a seasonal basis or may be temporary solutions until more permanent methods are developed, and 2) disposal at a transfer

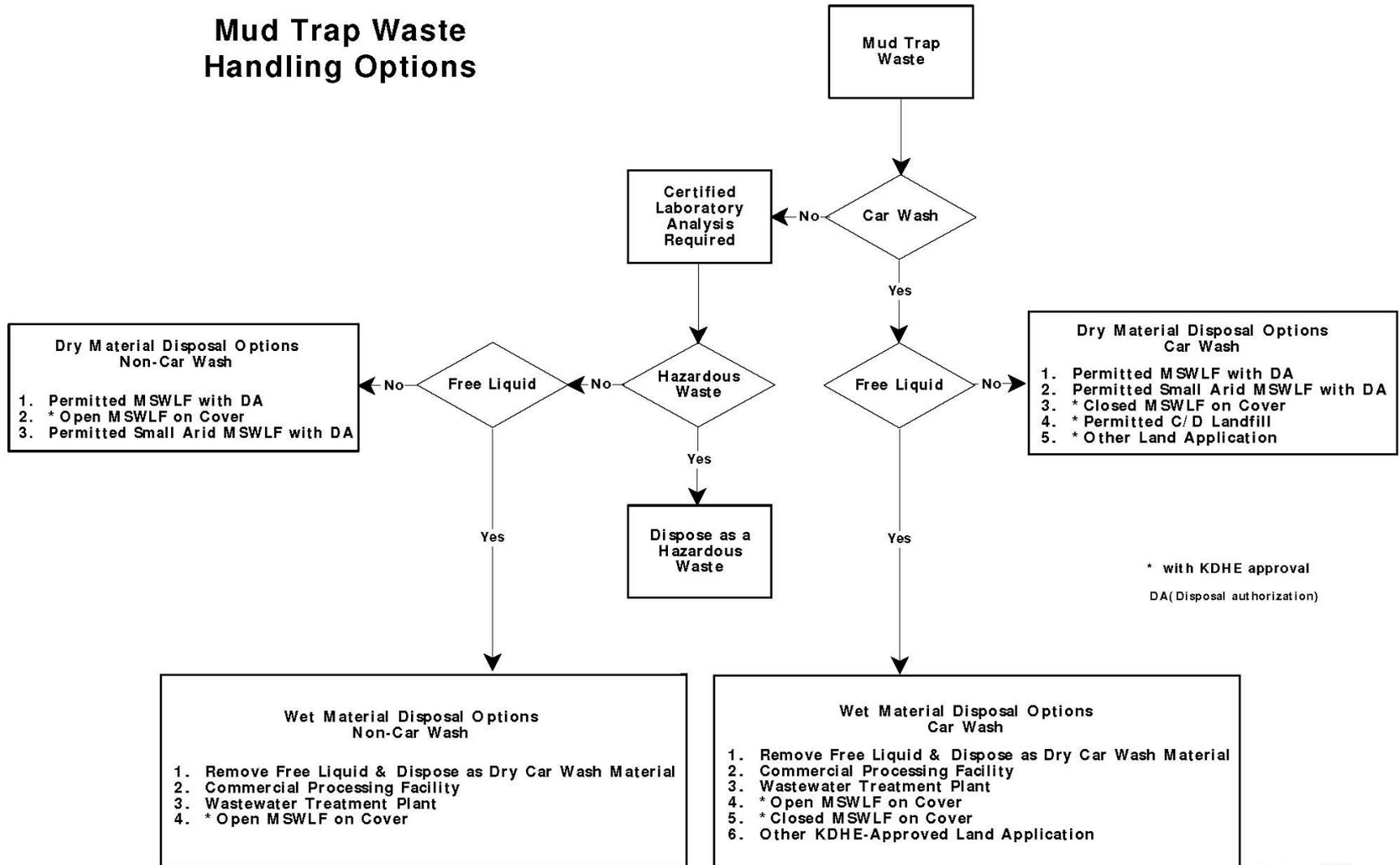
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3. Wastewater treatment plant
 4. Open MSWLF (surface applied on top of closed cell) with KDHE approval
 5. Closed MSWLF (surface applied on top of closed site) with KDHE approval
 6. Other KDHE -approved land application-on-site, pasture, fill area, co-disposal with wastewater treatment plant sludge, etc.
- B. Dry Material
1. Permitted MSWLF with a disposal authorization
 2. Permitted small arid landfill with a disposal authorization
 3. Closed MSWLF (surface applied on top of closed site) with KDHE approval
 4. Permitted construction/demolition landfill with KDHE approval
 5. Other KDHE-approved land application - on-site, pasture, fill area, co-disposal with wastewater treatment plant sludge, etc.

Repair/Industrial Facilities

- A. Non-Hazardous Wet Material
1. De-water and dispose as dry material
 2. Commercial processing facility
 3. Wastewater treatment plant
 4. Open MSWLF (surface applied on top of closed cell) with KDHE approval
- B. Non-Hazardous Dry Material
1. Permitted MSWLF with a disposal authorization
 2. Open MSWLF (surface applied on top of closed cell) with KDHE approval
 3. Permitted small arid landfill with a disposal authorization
- C. Hazardous Wet or Dry Material - ALL hazardous waste must be disposed in accordance with state rules and regulations addressing hazardous waste (K.A.R. 28-31-1 et. seq.)

A flow chart outlining options for handling mud trap waste is presented on the following page.

Mud Trap Waste Handling Options



Waste Tires Beneficial Use - Statute

- Statute 65-3424(c) defines Beneficial use as a use or storage of waste tires in a way that:
 - Creates an on-site economic benefit to the owner of the tires (bumper for boat docks, playground equipment, silo covers, traffic control, feed bunks, water tanks, windbreaks constructed of baled tires...erosion control on the face of an earthen dam and stabilization of soil or sand blow outs caused by wind:
 - As determined by the secretary, causes no adverse impacts to human health or the environment and complies with all applicable zoning requirements.

(The uses listed above do not require an application)

Waste Tires Beneficial Use

KAR-28-29-29a

- Adds management standards for the beneficial uses listed in the statutes
- Requires that the management plan includes mosquito control and minimization of risk and impact of fire
- Each person that plans to use or store waste tires for a beneficial use that is not listed in the KSA 65-3424, shall submit an application for approval to the department. The regulation also requires applications Beneficial Use of Waste Tires

Beneficial Use of Tires Application

- The application includes:
 - Applicant and site information
 - Applicant must submit
 - a drawing
 - summary of quantity of tires to use, how tires will drain to prevent mosquito breeding, fire prevention/control, project completion date, and proposed disposal method of tires
 - Landowner certification and zoning certification
- An approval letter is sent to the applicant.

Questions?

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