NEBRASKA

DEPT. OF ENVIRONMENT AND ENERGY

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Beneficial Use of Coal Combustion By-Products, Steel Manufacturing By-Products, and Similar Materials

This guidance document has been produced by the Nebraska Department of Environment and Energy (NDEE) to provide information on what is considered beneficial use of coal combustion by-products, steel manufacturing by-products, and other similar materials.

Nebraska Title 132 – Integrated Solid Waste Management Regulations require solid waste to be disposed of at a permitted solid waste facility. Title 132, Chapter 2, §002 allows exceptions to this requirement provided that the waste used in the exempted activities are not mixed with other solid wastes and do not have the potential to cause contamination that may threaten human health or the environment. If the waste is characteristic of a hazardous waste, it cannot be used for these beneficial use purposes. If a waste is used for a beneficial use, it is no longer considered a waste. The waste is then described as a beneficial use material.

The beneficial uses described below are based on NDEE's determination that there is no apparent threat to human health and environment from the use of these materials. This does not include an evaluation of the engineering properties of these materials and any determination of the ability of these materials to meet specific design criteria applications must be made by a qualified professional.

Coal Combustion By-Products

Coal combustion by-products used for beneficial uses must meet the exemption requirements of Nebraska Title 128 – Hazardous Waste Regulations, Chapter 2, §009.03. The most common types of coal combustion by-products are fly ash, flue gas desulfurization products, bottom ash, and boiler slag.

The following beneficial uses of coal combustion by-products are not regulated under Title 132 and do not require preapproval from NDEE to be used as beneficial use.

1. Construction or manufacture of products – Such as mixing coal combustion by-products with concrete or asphalt for the construction or manufacture of roads, poles, block, etc.

2. Hazardous waste stabilization – When using coal combustion by-products for hazardous waste stabilization, you must comply with Title 128, Chapter 20 Land Disposal Restrictions.

3. Ice control – When using coal combustion by-products specifically on ice jams in rivers, a National Pollutant Discharge Elimination System (NPDES) permit must be obtained from NDEE before initiating this activity.

4. Aggregate, Stabilizing, and Soil Modification – Coal combustion by-products may be used as base/subbase/subgrade under concrete, asphalt, armor coat, aggregate, chip seal aggregate, and under sand-gravel/limestone for roads, parking lots, or building sites.

5. Structural Fill and Controlled Density/Slurry Fill – Coal combustion by-products may be used when mixed with soil for backfill of utility lines, pipelines, sewers, or similar trenches, behind foundation walls, buildup of grade, or as an embankment for roadways and overpasses.

6. Soil amendment – Coal combustion by-products may be used at an agronomic rate to improve soils.

7. Feedlot applications – Coal combustion by-products may be used for feedlot applications including construction and maintenance of feedlot lanes and pens. Steps must be taken to ensure that surface and ground water will not be affected. If fly ash is used, it must be mixed with soil to prevent surface run-off and wind erosion of the fly ash. Bottom ash may be surface spread as an aggregate on feedlot lanes.

Steel Manufacturing By-Products

Steel manufacturing by-products used for beneficial uses must meet the exemption requirements of Nebraska Title 128 – Hazardous Waste Regulations, Chapter 2, §009.03. The most common types of steel manufacturing by-products are slags, dust, and sludges.

The following beneficial uses of steel manufacturing by-products are not regulated under Title 132 and do not require preapproval from NDEE to be used as beneficial use.

1. Construction or manufacture of products – When using steel manufacturing by-products as an aggregate in concrete or asphalt for the construction or manufacture of roads, poles, block, etc.

2. Aggregate, Stabilizing, and Soil Modification – Steel manufacturing by-products may be used as base/subbase/subgrade under concrete, asphalt, armor coat, chip seal, loose aggregate, under sand-gravel/limestone roads, parking lots, or building sites.

3. Anti-skid control – When using steel manufacturing by-products for snow and ice treatment on roadways.

4. Railroad ballast – For erosion control and stabilization of ties in railroad beds.

Evaluation Process for Other Beneficial Uses of Coal Combustion By-Products, Steel Manufacturing By-Products, and Other Similar Materials

The use of coal combustion by-products, steel manufacturing by-products and other similar material for purposes other than what is described above can be submitted for review and approval by the NDEE on a case-by-case basis. The NDEE encourages individuals and facilities to explore beneficial uses for the management of these types of materials. The beneficial reuse or recycling of these materials are a

recommended means of managing them, ensuring that the ultimate end use of the material is not disposal.

The following criteria will be used by NDEE to review beneficial use requests:

1. *Does the material exhibit regulated hazardous waste characteristics?*

   If it does, it cannot be used as a beneficial use material and must be handled according to the applicable regulations in Title 132 and Title 128.

2. *Is the material contaminated with other wastes?*

   A material is considered contaminated if it contains waste materials in concentrations that threaten human health or the environment.

3. *Does the material pose a potential threat to human health or the environment?*

   In making this evaluation, several factors will be considered including:

   a. Types of potential contaminants that may be present, any special handling requirements, health concerns or warnings, or environmental impacts associated with the material that can be found in published data, Material Safety Data Sheets (MSDSs), or past analytical data.

   b. Analytical data which would determine the type and concentration of any potential contaminants in the material. Test methods used to evaluate the material could include total metals, volatile organic compounds (VOCs), semi-volatiles, pesticides, polychlorinated biphenyls (PCBs), petroleum hydrocarbons, or any other test method deemed necessary to characterize the material.

   c. The potential for leaching and the transport characteristics of the material in question. Test methods used to evaluate these characteristics include the American Society of Testing Materials (ASTM) Test Number D3987-85 (water leach test) and the Toxicity Characteristic Leaching Procedure (TCLP) using the Environmental Protection Agency (EPA) SW-846 Methods.

      If the materials will be “fixed” or “treated” before use, the testing should be done after the material is fixed or treated. The terms “fixed” and “treated” mean that the material is processed in some way to reduce or eliminate the constituent of concern or its potential to threaten human health or the environment.

      Information collected can be from either recent sampling or historical data, but it must be representative of the material in question. When evaluating whether the material poses a potential threat, the material will be compared to the standards of the maximum concentration levels (MCLs) as identified in NDEE regulations including Title 128 – Nebraska Hazardous Waste Regulations Chapter 3, Title 117 – Nebraska Surface Water Quality Standards and Title 118 – Nebraska Ground Water Quality Standards and Use Classification. The data may also be compared to EPA Region 9 Preliminary Remediation Goals to evaluate if the material poses a potential threat through exposure pathways other than ground water and surface water.

4. *What are the site-specific conditions?*

   Provide data that describes the geologic and hydrogeologic conditions of the beneficial use area, describe the proposed use of the material at the site, and whether any engineering design features will be used.

5. *Is the end use of the material considered disposal?*

   The proposed use of the material must serve a legitimate purpose and have performance qualities similar to commercial or natural products commonly used for the same functions. The proposed material must test below MCL levels as identified in NDEE regulations including Title 128 – Nebraska Hazardous Waste Regulations Chapter 3, Title 117 – Nebraska Surface Water Quality Standards, Title 118 – Nebraska Ground Water Quality Standards and Use Classification, EPA Region 9 Preliminary Remediation Goals, or other recognized published data. NDEE will use the above criteria, along with other relevant information, to determine if the proposed use is beneficial use or disposal.

RESOURCES:

- NDEE Home Page https://dee.nebraska.gov/
- NDEE NPDES Program https://dee.nebraska.gov/water/water-permitting/national-pollutant-discharge-elimination-systems-npdes-program/

Contacts:

- NDEE Main Number (402) 471-2186
- NDEE Toll Free Number (877) 253-2603
- NDEE Waste Compliance Assistant (402) 471-8308
- Email questions to: NDEE.moreinfo@nebraska.gov

NDEE Publications:

- Title 117 – Nebraska Surface Water Quality Standards
- Title 118 – Nebraska Ground Water Quality Standards and Use Classification
- Title 128 – Nebraska Hazardous Waste Regulations
- Title 132 – Nebraska Integrated Solid Waste Management Regulations

  Titles are available on the NDEE Home Page under "Resources and Services", "Laws & Regulations", "Rules & Regulations".

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