Ohio EPA Policy	**Permits to Install; Procedures for Submittal of Plans for Coal Preparation Plants**	
DSW-0200.005 **Removed**	Statutory reference: Rule reference:	Ohio EPA, Division of Surface Water Revision 0, August 1, 1988 Removed, April 30, 2003
THIS POLICY DOES NOT HAVE THE FORCE OF LAW Pursuant to Section 3745.30 of the Revised Code, this policy was reviewed and removed.		

This policy does not meet the definition of policy contained in Section 3745.30 of the Ohio Revised Code. Ohio EPA is removing this document from the Division of Surface Water Policy Manual and is considering addressing this topic in a future rulemaking.

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Permits to Install; Procedures for Submittal of Plans for Coal Preparation Plants

APPLICABLE REGULATIONS: OAC 3745-31 and 3745-35, ORC Chapter 6111

ATTACHMENTS: 3 (3 pgs.)

PURPOSE: To provide details guidelines for submittal of coal preparation plant permits to install with regard to protection of surface water, ground water, and air of the state; and to provide guidance for consistent criteria for evaluation permit to install applications.

BACKGROUND: Ohio coal preparation (crushing, sizing, washing, stockpiling) plants are industrial operations (standard industrial code 1211) whose discharges to the environment are regulated by Ohio EPA.

POLICY: The air, surface water, and ground water Ohio EPA program divisions are responsible for reviewing permit to install applications for waste stream treatment associated with coal preparation operations. The following procedures are those used by Ohio EPA in assessing the adequacy of proposed treatment systems, and are meant to guide operators and their consultants in developing permit to install are not meant to replace consultation with Ohio EPA district representative, but rather outline the requirements for approval permit to install applications.

PROCEDURES: WATER POLLUTION CONTROL REQUIREMENTS

Ground Water Protection

Coal piles, refuse disposal areas, slurry ponds, treatment ponds, ditches conveying contaminated waters to treatment, and processing areas where coal or refuse may be stored or spilled must be sited on soils which provide the equivalent of 1.0×10^{-7} centimeters/second (or less) permeability throughout a minimum thickness of three feet. This minimum acceptable permeability is required by Ohio EPA to provide adequate ground water protection. If tests of in situ soils (please refer to "Soil Testing" elsewhere) indicate that these criteria for minimum permeability and soil thickness are present, then the site may be used without additional ground water protection measures. It is always preferable to site coal preparation facilities in areas which are naturally protective of ground water.

In many cases, however, a compacted clay liner, from three to five feet thick with a permeability of less than or equal to 1.0×10^{-7} centimeters/second must be installed under coal storage piles, refuse disposal sites, slurry ponds, drainage channels which transport contaminated runoff, treatment ponds, and handling areas. If a tipple or wash plant is proposed, the protective liner must also underlie the actual plant structure. Please note that all water that contacts coal or refuse is deemed contaminated.

Liner material should be deposited in six inch thick lifts and compacted with a sheep's foot roller or equivalent. Before use, the liner should again be tested to verify the minimum acceptable permeability, density, and moisture content. Synthetic liners should not be considered except in unusual circumstances.

If a synthetic liner is to be used, it must be compatible with the proposed wastewater and pond design. An unreinforced liner must be at least thirty mils thick: a reinforced liner must have thirty mils of membrane plus the thickness of the reinforcing. The installation must be performed or supervised by the manufacturer, factory, or qualified agent, who must certify its installation in accordance with the permit to install, plans, and manufacturer's standards. If the synthetic liner is to be used as a pond liner, adequate provisions must be made to remove sediments or slurry without damaging the liner.

If a recompacted liner is to be used, the application shall include calculations showing the amount of liner material needed, the location of the borrow area, and calculations showing the amount of borrow material is adequate.

Dedicated refuse disposal areas must be lined to protect ground water. When the fill area is full and the refuse is dewatered, the surface must be covered with a clay cap at least two inches thick, compacted to provide a permeability of 1.0×10^{-7} centimeters/second or less, one and one-half feet of non-toxic soil material, and at least six inches of topsoil in order to support a dense vegetative cover. Plans must explain how much cover will be needed and where it will be obtained.

Surface Water Protection

Process wash, dust suppression, and storm water runoff that have been in contact with coal or refuse are the usual sources of coal-contaminated runoff, which (in Ohio) tends to be low in pH (acidic) and high in dissolved solids and metals, especially iron and manganese. Large preparation plants dedicated to a specific underground mine will have water to treat from the underground workings as well. In all cases, a central wastewater treatment system with on discharge (one hundred percent recycle) is the preferred option.

Some plants may achieve total recycle with only additional makeup water required. Others will need to discharge water after treatment due to design. The treatment technology required (neutralization, aeration, and settling) is essentially the same in either case. Ohio EPA requires that all proposed treatment systems reflect best available technology to achieve federally mandated effluent limitations. Proposals should include best available technology most suited to local (site) conditions.

A process flow diagram for the proposed preparation plant which shows all process streams and wastewater treatment (including a water balance) is an essential part of the permit to install application. All wastewater flows should be shown in gallons per minute, including fine coal slurry. Flows which transport slurry

should include the solids percentage within each pipe. The raw coal input, either by mass or weight, should balance with the sum of cleaned coal and coarse and fine refuse.

Dual pumps are required at all pump stations, preferably installed to alternate duty cycles. Pump interiors should be of appropriate materials (stainless steel, synthetics) resistant to the corrosive and abrasive conditions encountered. Pump stations should be readily accessible for pump service or replacement. Spare parts should be maintained against unexpected breakdowns.

Pipe and pipe joint materials specifications for significant wastewater flows should be included on detail drawings. Installation procedures for lengthy slurry lines should be explained.

Ponds which are used as aeration or settling basins must be designed to contain runoff from a ten year, 24-hour storm event over their drainage areas in addition to projected process wastewater volumes. Both pond volume and watershed area must be provided on plan sheets. Where physical considerations limit available pond volumes, diversion ditches should be added to keep uncontaminated runoff out of the pond. Provisions for sediment cleaning should be explained, and final sediment disposal addressed. Discharge structures consisting of standpipes with trash racks are recommended. Emergency spillways are recommended. These requirements, including ground water protection (liners), are in addition to Ohio Department of Natural Resources, Office of Surface Mining of the Department of the Interior, and MSHA? requirements for sediment structures.

Small crushing-only operations without coal washing facilities may require one or two settling ponds to contain runoff and a soda-ash hopper to provide neutralization. Where the treatment ponds are located in steep hilly terrain, routing flow through a rip-rapped cascade can provide a substantial amount of reaeration after neutralization.

Coal washing operations are usually served best by a central wastewater treatment plant. Important considerations which should be covered in the permit to install application include: methods of neutralization, solids settling, removal of solids, method of aeration, quantity and quality of water to be discharged.

If the plant will have a fine coal washing circuit, refuse dewatered must be addressed as the method of dewatering, amount of fine refuse produced, and its final moisture retained.

Refuse Disposal

Ultimate disposal of the non-coal fraction (refuse) must be provided. Currently, coal refuse from coal washing operations a surface mines may be disposed in active strip cuts under effective permits through the Department of Natural Resources. This is the least desirable means of disposal.

Coarse or combined coarse and fine refuse from preparation plants not subject to the above procedure must be placed in designated

disposal areas which are protective of ground water by virtue of existing or modified soil conditions. disposal sites should be engineered to provide stability for the disposed refuse by means of refuse placement and compaction (ten inch lifts are recommended), drainage control, and runoff treatment. Effective life span should be calculated and a closure plan described. The Department of Natural Resources, Division of Reclamation, requirements specify a four feet thick cover of non-toxic material. Closure plans submitted to Ohio EPA must specify that of four feet thick cover, a clay cap at least two feet thick of low permeability (1×10^{-7} centimeters/second or less) soil must overlie the refuse, prior to the additional one and one-half feet of other soils, one-half foot of topsoil, and seeding to provide a dense vegetative cover. This cap, often placed over a geotextile material to enhance stability, must be mated at the edges to lining soils or materials which underlie refuse. Wastewater treatment which reflects best available technology must be provided for surface runoff and leachate from refuse disposal discharged to state waters.

Slurry Impoundments

Slurry impoundments provide preparation plants with a combination of all-season process water storage, clarification, and fine refuse disposal in one structure. As such, these lagoons must meet regular treatment pond criteria. Slurry impoundment proposals should include: site geological and stability analysis, provisions for a clay liner at least three feet thick with a minimum permeability of 1×10^{-7} centimeters/second (or less) at design diversion ditches, runoff capacity for a ten year, 24-hour storm, in addition to maximum process flow.

Embankments must be designed to provide for collection and treatment of seeps from both the downstream face and toe of the dam. All embankments over ten feet high must be permitted through the Department of Natural Resources, Division of Water.

Discharge structures whose flow-through pipes pass through constructed embankments must have anti-seep collars to lessen seepage around the discharged line. Discharge structures consisting of standpipe with trash rack are recommended, as are emergency spillways.

Slurry dewatering within the impoundment prior to closure must be explained.

Closure plans for slurry impoundments must address surface stability, propose an infiltration barrier (two feet of compacted clay at minimum 1×10^{-7} centimeters/second or less permeability), one and one-half feet of non-toxic cover, and six inches of topsoil seeded to provide a dense vegetative cover. provisions for regrading and/or filling to provide a minimum slope of one to three degrees must be made.

Soil Testing

Soil used for a construction material, whether, for a pond liner or a landfill cover or liner, should have a relatively uniform texture and a very low permeability, and be cohesive and non-putrescible. Certain of these characteristics may be evaluated by visual observation; however, actual laboratory tests are necessary to demonstrate the suitability of a soil.

Representative samples of each soil type proposed for use must be stated for the following parameters.

1) Grain Size Analysis

Grain size analysis must be performed on the entire sample and include grain size from 100 millimeters through 0.001 millimeters. This will require that both sieve and hydrometer analysis be performed (ASTM D-422).

2) Atterberg Limits

The plastic and liquid Atterberg limits need to be determined (ASTM D 423 and D-424).

3) Unified Soil Classification

The Atterberg limits and grain-size analysis are used to classify a soil according to the unified soil classification system (USCS).

4) Permeability

The type of permeability testing is determined by how the soil will be used. The soil may be used in situ or it may be moved (borrowed) and recompacted. For soils which are to be used in situ, permeability testing must measure the soil under undisturbed conditions. soils which are moved and recompacted must be tested under the same conditions that are used in constructing the facility. Recompacted soils will also require that the moisture-density relationship be determined.

Undisturbed Permeability Testing

Where soils will be used as they are found in the ground (in situ), thin-walled (shelby) tube samples are often the most effective type of sample to test. Shelby tube samples may be tested a number of ways in the laboratory. The preferable method is to extrude the sample from the tube, trim away the potentially disturbed outside surface of the sample, and encase it in a latex membrane for testing in a tri-axial chamber. Alternatively, the sample may be tested within the shelby tube or trimmed to fit in a rigid-walled test chamber; both of these methods may give less reliable results because of the potential for flow to develop between the sample and the test chamber. With any of these methods, it is crucial that the sample be completely saturated before the test is run. Details of these test methods may be found in ASTM methods.

In Situ Testing

One type of field permeability test that may be performed when the soil to be tested is or can be exposed is a double-ring infilitrometer test. it uses two relatively large rings, generally three to eight feet in diameter. This test is especially valuable because it tests a relatively large area and is more indicative of actual soil performance. In this test, two concentric watertight rings are carefully driven into the ground several inches. Both are filled with water and left for at least 24 to 48 hours for the soil to saturate. At this time, the water levels are adjusted to insure that both water is added at time intervals to maintain the starting water level. The volume and time of each addition is recorded. The test continues until the volume/time relationship stabilizes and the permeability is calculated.

Another commonly used method for obtaining in situ permeabilities is the failing head infiltration test. This test is similar to a infiltration test. However, this test measures both horizontal and vertical permeability where the double-ring infiltrometer measures only vertical permeability. For this test, a hole is excavated into the soil to be tested. Care must be taken not to smear the clay soils on the sides or bottom of the hole. If the soils are smeared, this layer must be carefully removed to expose undisturbed soil adjacent to the hole are allowed at least 24 hours to saturate. At that point, the rate of dropping water level is measured, usually for at least 24 hours. Occasionally, where the soils are already below the water table (saturated), a rising head test may be performed. It is essentially the same as falling head, except water is removed from the hole and the rate of return is measured. In deep boreholes, a single or double packer test may also be performed. However, this test is usually only used on rock materials.

Recompacted Permeability Testing

Recompacted permeability testing must be performed at or below design (construction) specifications. To determine what conditions to use for testing, you must first determine what equipment is available for soil compaction. to achieve 95 percent standard maximum dry density of above, specialized equipment is usually needed (i.e, vibratory roller, sheep's foot roller, or rubber tired roller). When specialized compaction equipment is not available, 90 to 92 percent of standard maximum dry density is usually achievable with numerous (four to six) passes of a piece of heavy equipment (i.e., bulldozer, front-end loader, etc.). Because of its unstable base, landfill cover material may not be compacted much above 90 percent regardless of the equipment. Depending on the equipment available for compaction and the intended use of the soil, choose an initial testing density and prepare the sample at a moisture content between optimum and four percent above optimum moisture content. If the permeability under these conditions is substantially below 1 x 10^{-7} centimeters/second, it may be desirable to rerun the test at a lower density. Conversely, if the permeability is slightly above x 10^{-7} centimeters/second and there is equipment available to compact the soil to a desirable to minimize the compacting effort necessary for low permeability, because high rates of compaction are difficult

and expensive to achieve. if the permeability is substantially above 1 x 10^{-7} centimeters/second, another source of soil should be found.

The moisture-density relationship determines the optimum moisture content and the maximum dry density of a soil. These parameters are then used to determine the design specifications for the soil. Most soils are tested using the standard method (ASTM D-698) which is most reasonable for high clay content soils which will require minimal compaction to achieve a very low permeability (< 1 x 10^{-7} centimeters/second); design specifications must insure that this permeability is achieved. A plan for quality control and quality assurance (QA/QC) of the constructed facility should be developed. This plan should include density and moisture content testing to insure that the soil was used according to design specifications.

Air Pollution Control Requirements

If the coal preparation plant was or is to be built after January 1, 1974, the owner or operator must obtain a permit to install from the agency prior to initiating construction of the air pollution sources. A permit to install application must be submitted to the appropriate Ohio EPA district office of local air agency. Response to the questions on the permit to install application, along with the following appropriate appendices, will provide the Ohio EPA with the necessary information to make a determination of the adequacy of the proposal.

Appendix M-19, Coal Processing Plants
Appendix M1-1, Plant Roadways and Parking Areas
Appendix M1-2, Aggregate Storage Piles
Appendix M1-3, Material Handling
Appendix M1-4, Mineral Extraction

For all coal preparation plants, regardless of installation date, the owner or operator needs to obtain individual permits to operate for all sources of air pollution emissions prior to operation the air pollution sources. Each individual source need to have its own permit to operate. The sources are those areas for which the five appendixes are listed above. If a given preparation plant does not have all five sources at this location, then only those sources which are present need permits.

Generally, for the processing plant, control requirements to reduce air emissions include enclosures of crushers, conveyor belts, and handling emissions, or wet suppression of dust at strategic location of the processing plant. Roadways and parking areas need to be controlled by paving, speed bumps, posted speed limits, and/or wet suppression systems. Truck wheel wash stations may be needed where trucks travel from unpaved to paved areas. Stock piles and material handling operations normally need to be controlled by wet suppression systems or other adequate controls. New coal processing plants are further subject to new source performance standards, if over two hundred tons per day of coal is processed. Those standards have limits on the mass emissions from thermal dryers as well as visible emissions from other sources. All new sources must employ best available technology.

Any applications filed with Ohio EPA must include an application fee of $15 per source/application. A single permit to install may be issued for all sources at the facility but individual permits to operate will be issued for each source. Permits to install may be issued jointly by the Divisions of Air and Surface Water.

Any questions on coal preparation plants may be directed to the appropriate district office or local air agency.

Submitting the Application Package

Three copies of the proposal, along with three copies of the detail plans, are required. A completed, signed copy of the permit to install application must be returned along with the appropriate fees: $15 application fee and a plan review fee equal to $100 plus 0.2 percent of the cost of the wastewater treatment facilities. These fees cover only the wastewater portion of the permit.

A permit to install application is required prior to initiating construction of air pollution sources as well. This permit application can be combined with the wastewater application. A separate $15 application fee and a plan review fee equal to $100 plus 0.2 percent of the cost of the wastewater treatment facilities. These fees cover only the wastewater portion of the permit.

A permit to install application is required prior to initiating construction of air pollution sources as well. This permit application can be combined with the wastewater application. A separate $15 permit to install application fee is required for each air source. A $15 permit to operate for each air pollutant source is required as well. The page titled "Fee Information" attached to the permit to install application instructions provides additional guidance for calculating fees. All checks should be made payable to "Treasurer, State of Ohio". Application and plan review fees are non-refundable.

Discharge Permits and Effluent Limitations

A National Pollutant Discharge Elimination System permit is required for all process and sanitary wastewater discharges to waters of the state. The NPDES permit specifies effluent limitations for pollutants associated with coal mining operations.

These effluent limitations are specified as a final rule in the October 9, 1985, Federal Register under 40 CFR 434. These are the effluent limitations applicable at the writing of this policy. Coal operation with discharges must file Forms 1 and 2c when applying for NPDES permits. These forms, as well as permit to install application forms, may be obtained by contacting the district representative for the industrial wastewater program at the appropriate district office.

It is strongly recommended that NPDES permit application be filed when the permit to install is applied for. The NPDES application fee is $15.

DSW-0200.005 ATTACHMENT 1

MINOR INDUSTRIAL WASTEWATER INSPECTION REPORT

1) Company Name _____

2) Company Location _____

3) Date of Inspection _____

4) Personnel Ohio EPA Entity & Title

_____ _____

_____ _____

5) Inspection Type

-Reconnaissance _____
-Permit to Install _____
-NPDES _____
-Complaint _____
-Operation & Maintenance _____
-Other_____ _____

6) Areas Evaluated

-Permit _____
-Records/Report _____
-Site Review _____
-Monitoring _____
-Effluent/Receiving Waters _____
-Compliance Schedules _____
-Sludge Disposal _____
-Other_____ _____

7) Findings

-Entity in compliance _____Yes _____No _____Substantially
-Areas not in compliance
1) _____
2) _____
3) _____
4) _____
5) _____

8) Recommendations _____Yes _____No
1) _____
2) _____
3) _____
4) _____

-Company Response Necessary? _____Yes _____No
-Company Response Date _____ Telephone_____ Letter_____

DSW-0200.005 ATTACHMENT 2

_____ Unpermitted discharge
_____ Untreated discharge
_____ Contaminated Runoff
_____ Origin of discharge pipes unknown
_____ Visually noncompliant discharge
_____ Receiving stream enrichment
_____ Commingling of dilution
_____ Damaged/inoperative industrial waste treatment
_____ Treatment system overloaded
_____ Uncovered liquid waste containers outdoors
_____ Incompatible wastestreams combined for treatment
_____ Unprotected/uncollared drains
_____ Unlined ponds, ditches, etc.
_____ Unnecessary floor drains
_____ Destination of floor drains unknown
_____ No consolidated drum storage area(s)
_____ Too many old drums lying around
_____ Oil soaked ground or oil standing on ground
_____ Tanks without spill containment
_____ Wastewater treatment facility in total disarray
_____ Qualified person not in charge of wastewater treatment plant and/or housekeeping
_____ Anaerobic lagoons
_____ Fish kill
_____ Sumps not cleaned
_____ Sludge buildup
_____ Oil and grease not skimmed
_____ Short circuiting in settling ponds

DSW-0200.005 ATTACHMENT 3

_____ Trash trap full

_____ Air not distributed evenly
- _____ Air cleaner dirty
- _____ Belts loose
- _____ Too much foam
- _____ Motor appears noisy or overheated

_____ Aeration tank septic
- _____ Blower turned off
- _____ Diffuser plugged
- _____ MLSS too high
- _____ Possible slug influents
- _____ Organic overload
- _____ Bad air line

_____ Not enough solids in the aeration tank
- _____ Too much infiltration/cooling water
- _____ Grossly underloaded
- _____ Too much sludge wasted

_____ Sludge/skimmer return not in operation

_____ Return sludge too watery

_____ Scum excessive/sludge build-up in the final settling tank

_____ Effluent weirs not level

_____ Dosing equipment inoperable/neglected

_____ Distribution chamber, pipes leaking

_____ Filter beds weed-covered, need repairs

_____ Too few fines in sand

_____ Filters clogged/solids excessive

_____ Both filter beds in use

_____ Chlorination not practiced

_____ Plant not operated on a full-time basis

_____ Plant in total disarray

_____ Inadequate security

_____ Qualified person not available to tend plant

_____ Rusty grates/cracked concrete/other structural damage

_____ Other _____