

RULE 1.68. DISPOSAL OF NATURALLY OCCURRING RADIOACTIVE MATERIALS (NORM) ASSOCIATED WITH THE EXPLORATION AND PRODUCTION OF OIL AND GAS

I. Definitions

For the purposes of this Rule

1. "Ambient Exposure Rate" shall mean an indication of the potential for a human to incur a radiation dose. Ambient exposure rates are measured in units of "millirem per hour" or "microrentgen per hour" at a height of one meter (three feet) above a horizontal land surface and 0.3 meter (one foot) from the midpoint of a horizontal or vertical equipment surface. A microR meter with an internal or external probe is generally used for this measurement.
2. "Board" shall mean the State Oil and Gas Board.
3. "Clean fill" shall mean soil with radiological characteristics that cannot be distinguished from background.
4. "Commercial oil field exploration and production waste disposal" shall mean storage, treatment, recovery, processing, disposal or acceptance of oil field exploration and production waste from more than one (1) generator or for a fee.
5. "Equipment" shall mean tanks, valves, tubing, rods, pumps, tools and other equipment commonly used at oilfield exploration/production sites.
6. "Landspreading" shall mean an action that involves blending of soil with NORM impacted scale or NORM impacted soil to achieve NORM concentrations that are at or below the release criteria. Landspreading does not include blending of soil with NORM impacted sludge, tank bottoms, drilling muds, drill cuttings or other materials. (See "Surface Landspreading" and "Subsurface Landspreading").
7. "Naturally occurring radioactive material" (hereinafter "NORM") shall mean any nuclide which is radioactive in its natural physical state (i. e., not man-made), but does not include byproduct, source or special nuclear material nor does it include radioactive materials continuously contained within the closed system of exploration and production of oil and gas, including but not limited to produced saltwater.
8. "Surface Landspreading" shall mean the raking or tilling of non-homogeneous surface NORM deposits within a discrete land area in order to achieve a homogeneous distribution of NORM over the top six (6) inches of soil within that land area.

9. "Subsurface Landspreading" shall mean the blending of NORM with clean fill prior to its placement in an impacted area in order to achieve a homogeneous distribution of NORM throughout the blended volume. The impacted area is then covered with soil or other materials after placement of the blended volume.

10. Additional relevant definitions are as given in Rule 69.

II. General Provisions

1. Disposal of NORM will be handled in accordance with this Rule, Rule 28, Rule 69 and/or Rule 63 of the Statewide Rules and Regulations.

2. All necessary forms and any requested schematics shall be executed to show placement of NORM in the well bore of plugged back wells and abandoned wells and during surface/subsurface landspreading, also in accordance with other Statewide Rules and Regulations as they may apply.

3. Proper permitting for Radioactive Waste Transportation shall be obtained through the Mississippi Emergency Management Agency in accordance with its rules and regulations concerning same.

III. Information

1. Any property subject to a valid oil and gas lease, and/or any dry, abandoned or plugged back oil and/or gas well may be considered as a potential disposal site for NORM, subject to the further provisions contained herein.

2. Each owner, operator and/or producer of a well shall be responsible for the proper disposal of NORM in accordance with all applicable rules and regulations of all appropriate state or federal authorities.

3. In order to qualify for disposal pursuant to this Rule, the NORM must have been derived from the exploration and production of oil and gas within the territorial limits of the State of Mississippi.

IV. Acceptable Methods of Disposal

1. Placement between cement plugs; or

2. Encapsulation in pipe then placed between cement plugs; or

3. Mixed with gel or mud (slurried) and placed between cement plugs; or
4. Slurried then placed into a formation; or
5. Surface landspreading; or
6. Subsurface landspreading; or
7. Disposal offsite at a licensed, low level radioactive waste or NORM disposal facility; or
8. Any options other than those listed above will be evaluated for possible approval by the State Oil & Gas Board Technical staff

V. Limitations and Conditions

1. General

1. The NORM to be disposed of in accordance with this Rule shall only be from oil and/or gas exploration and production activities carried out within the territorial limits of the State of Mississippi.
2. No person may dispose of oil and gas NORM waste without a permit. A NORM disposal permit shall be issued for a period of time that is reasonably necessary to complete the disposal activity not to exceed five (5) years.
3. No person may commercially dispose of NORM under this Rule from more than one (1) generator or for a fee. Any person seeking to operate a commercial oil field exploration and production NORM waste disposal facility must comply with the requirements of the Mississippi Department of Environmental Quality.
4. Disposal of NORM through landspreading shall only occur in areas where published literature or site-specific determinations indicate that the groundwater table is equal to or greater than five (5) feet below the bottom of the disposal area.
5. Locations utilized for NORM disposal through landspreading shall not be situated in 25-year flood plains as defined by

published literature or determined through site-specific topographic surveys.

6. Locations utilized for NORM disposal through surface and subsurface landspreading shall not be situated within 300 feet of an inhabited dwelling.
7. The operator shall notify the Supervisor at least forty-eight (48) hours prior to beginning disposal operations, unless waived by the Supervisor, in order that his representative may be present to observe and inspect any such work, in which event the representative shall file a report thereof.

2. Downhole Disposal

1. Any NORM not continuously contained within the closed system of exploration and production of oil and gas shall be injected or placed into cased holes which have at least one hundred (100) feet of casing set below the base of the Underground Source of Drinking Water ("USDW") and properly cemented to protect the USDW and have at least two (2) sand sections behind the casing below the USDW. Any well in which the NORM is not encapsulated must meet all the criteria of Rule 63 of the Statewide Rules and Regulations and be properly permitted as a Class II UIC well before injection begins.
2. A minimum of a 100-foot plug shall be placed immediately below the USDW. Unless there is proof of adequate cement behind the casing, the casing shall be perforated 100 feet below the USDW and shall be squeezed with a sufficient amount of cement calculated to provide 100 feet of cement in the annulus and leave a 100-foot plug in the casing.
3. The cement plug immediately above and below the NORM shall be a minimum of 100 feet in length. A cast iron bridge plug may be utilized with a minimum of 20 feet of cement placed on top of the bridge plug. All abandoned wells which contain disposed NORM shall be permanently marked by a steel plate at the top of the casing. This marker shall contain the well name, API number, date of plugging and the fact that

NORM waste exists in the well. All cement used in the well bore above NORM placement shall be standard color-dyed red with iron oxide.

4. The interval of well casing above the packer in which NORM is to be injected shall be pressure tested to a minimum of 500 psig for 30 minutes for integrity. More than 3% pressure loss in 30 minutes constitutes loss of integrity. Loss of integrity shall be treated as set forth in Rule 63, Part 3A. The injection tubing string shall be pressure tested to a minimum pressure of 1 ½ times (150%) the intended surface injection pressure. A test chart of the injection string testing shall be maintained by the operator. All tests shall be conducted under the supervision of the State Oil and Gas Supervisor or his representative.
 5. NORM shall not be used as admixtures in cements used for well plugs.
 6. The Plugging Report shall show the size, grade, weight per foot, outside diameter of impacted tubing, and the depth of the top and bottom of the tubing, the diameter of the coupling, and whether the tubing is free or secured in cement, a bridge plug or a retainer.
3. Landspreading
1. Shall not be performed with materials that exhibit ambient exposure rates in excess of 600 microR per hour above background.
 2. Shall not be performed in areas where the general area exposure rate is significantly elevated above background due to the presence of equipment.
 3. Is permitted only: at the site of origin, with the written consent of the surface landowner (if different from the operator). The landspreading shall be limited to that portion of the surface of the land reasonably necessary, excluding lease roads, used for the conduct of producing operations of a well.

4. Shall require the performance of a pre- and post-landspreading survey of the impacted land area as described in Rule 69, with the results thereof submitted to the State Oil and Gas Board on Board Form 21 (or equivalent).

VI. Procedures

1. Downhole Disposal

- a. Request for downhole disposal of NORM must be submitted by petition to the State Oil and Gas Board and shall include the following:
 - i. Source(s) of NORM identified by operator, field, well name(s) and, if known, the producing formation.
 - ii. Type(s) of NORM (pipe scale, contaminated soil, basic sediments, etc.).
 - iii. Volume of NORM to be disposed of reported in cubic feet, barrels, or length and diameter of tubing.
 - iv. Radiation level(s) in microrentgens per hour (uR/hr.).
 - v. Disposal methodology
- b. Accompanying the petition shall be a proposed well schematic showing the proposed work upon completion, along with a completed Form 6 and an affidavit concerning the proposed NORM disposal and its compliance with all applicable rules and regulations. This proposal should be a reflection of what will be submitted in the final plugging report. The petitioner must give public notice of the hearing on the petition and such notice shall state that the well will be utilized for the disposal of NORM produced with exploration and production waste.
- c. If tubing is to be placed between plugs, but not secured in cement, then the top joint of the tubing string that contains NORM shall be left with a top coupling. All tubing shall be placed in the well and not dropped into the well.

- d. The plug immediately above the NORM shall be tagged unless a bridge plug or cement liner is used.

2. Landspreading

1. Surface Landspreading

- a. Surface landspreading shall be performed by raking or tilling deposits of NORM within the top six (6) inches of soil.
- b. The operator shall ensure that upon completion of the landspreading activity, the ambient exposure rate at any given point in the impacted area does not exceed eight (8) microR per hour above background and that the concentration of Radium 226 or Radium 228 does not exceed 5 pCi/g above background. If at the completion of the landspreading activity the ambient exposure rate or the concentration levels of Radium 226 or Radium 228 are demonstrated to exceed the prescribed limits, the operator shall take appropriate remedial or corrective action.
 - i. For any disposal site less than 3.0 acres in size, a survey of the impacted land area shall be performed to demonstrate that the ambient exposure rate at any given point in the impacted area does not exceed the eight (8) microR per hour above background.
 - ii. For any disposal site equal to or greater than 3.0 acres in size, the survey referenced in Part b.i above shall be conducted to demonstrate that the ambient exposure rate at any given point in the impacted area does not exceed the eight (8) microR per hour above background and a representative soil sampling of the impacted land area shall be performed to demonstrate that the soil sample analysis at any given point in the impacted area that the concentration of Radium 226 or Radium 228 does not exceed 5 pCi/g above background.
- c. The completed Board Form 21 shall document conformance with Section V.1.4. and 5. ("Limitations and

Conditions”), as well as with the requirements of Section VI.2.1.a. and b. (“Surface Landspreading”).

2. Subsurface Landspreading

- a. Subsurface landspreading shall be performed by blending NORM with clean fill prior to placing the blended volume into the area of interest or creating an area of subsequent layers.
- b. The blended volume shall be placed in the area of interest in layers of not greater than six (6) inches, not to exceed three (3) feet of total blended volume thickness.
- c. The operator shall ensure that upon completion of the landspreading activity, the ambient exposure rate at any given point in the impacted area does not exceed eight (8) microR per hour above background and that the concentration of Radium 226 or Radium 228 does not exceed 5 pCi/g above background. If at the completion of the landspreading activity, the ambient exposure rate or the concentration levels of Radium 226 or Radium 228 are demonstrated to exceed the prescribed limits, the operator shall take appropriate remedial or corrective action.
 - i. For any disposal site less than 3.0 acres in size, a survey of the impacted land area shall be performed to demonstrate that the ambient exposure rate at any given point in the impacted area does not exceed the eight (8) microR per hour above background.
 - ii. For any disposal site equal to or greater than 3.0 acres in size, the survey referenced in Part c.i above shall be conducted to demonstrate that the ambient exposure rate at any given point in the impacted area does not exceed the eight (8) microR per hour above background and a representative soil sampling of the impacted land area shall be performed to demonstrate that the soil sample analysis at any given point in the impacted area that the concentration of Radium 226 or Radium 228 does not exceed 5 pCi/g above background.

- d. The impacted area shall be surveyed and/or sampled prior to the application of a final soil cover over the subsurface landspreading disposal area.
- e. The completed Board Form 21 shall document conformance with Section V.1.4. and 5. ("Limitations and Conditions"), as well as with the requirements of Section VI.2.2.a.b.c. and d. ("Subsurface Landspreading").

3. The work duration for landspreading, using the operational methodology described above, shall not exceed 100 hours per calendar year for a single individual. If it is anticipated that extended stay times might occur, the operator shall complete one of the following:

- a. Take actions to reduce the dose rate to which personnel are exposed (i. e., increase distance, shielding and/or dust controls);
or
- b. Establish a radiation protection program pursuant to Mississippi Department of Health Regulations.

VII. Exceptions

Exceptions to any of the above listed limitations, conditions and criteria may be allowed after consultation with the State Oil and Gas Board staff and upon proper Notice and Hearing of a petition filed with the Board requesting same.

VIII. Penalty for Violation

In accordance with State Statute 53-1-47, any person who violates any provision of this rule shall be subject to a penalty of not to exceed Ten Thousand Dollars (\$10,000.00) per day for each day of such violation to be assessed by the Board.

IX. Effective Date

This Statewide Rule 68, Board Order Number 253-99, shall take effect and be in force from and after sixty days from being filed with the Secretary of State's Office.

X. Validity

Should any section, subsection or other provision of this rule be declared by a court of competent jurisdiction to be invalid, the decision shall not effect the validity of

the rule as a whole, or any part thereof, other than the part so declared to be invalid, this Board hereby declaring that it would have adopted those parts of this rule which are valid and omitted any parts which may be invalid, if it had known that such part or parts were invalid at the time of the adoption of this rule.

Source: MCA Section 53-1-17(3) (1972)

Effective: January 18, 2016