

**TREATMENT OF
DRILL MUD, MUD WASTE, AND DRILL CUTTING IN OIL AND GAS DRILLING ACTIVITIES**
(Regulation of the Minister of Energy and Mineral Resources No. 045/2006 dated July 20, 2006)

**THE MINISTER OF
ENERGY AND MINERAL RESOURCES,**

Considering:

- a. that, drilling operations in oil and gas upstream business needed drill mud that produces mud waste and drill cutting that have a negative effect on the environment, so that they need proper control and treatment;
- b. that, based on the considerations, as meant in paragraph a, it is necessary to stipulate Regulation of the Minister of Energy and Mineral Resources on Treatment of Drill Mud, Mud Waste, and Drill Cutting in Oil and Gas Drilling Activities;

In view of:

1. Law No. 23/1997 on Environmental Treatment (Statute Book of 1997 No. 68, Supplement to Statute Book No. 3699);
2. Law No. 22/2001 on Oil and Gas (Statute Book of 2001 No. 136, Supplement to Statute Book No. 4152) as already amended by Decision of Constitutional Board No. 002/PUU-I/2003 dated December 21, 2004 (State Gazette No. 1 of 2005);
3. Government Regulation No. 17/1974 on Monitoring of Offshore Exploration and Exploitation of Oil and Gas (Statute Book of 1974 No. 20, Supplement to Statute Book No. 3031);
4. Government Regulation No. 18/1999 on Treatment of Hazardous and Toxic Materials (Statute Book of 1999 No. 31, Supplement to Statute Book No. 3815) as already amended by Government Regulation No. 85/1999 (Statute Book of 1999 No. 190, Supplement to Statute Book No. 3910);
5. Government Regulation No. 35/2004 on Oil and Gas

Upstream Business Activities (Statute Book of 2004 No. 123, Supplement to Statute Book No. 4435) as already amended by Government Regulation No. 34/2005 (Statute Book of 2005 No. 81, Supplement to Statute Book No. 4530);

6. Presidential Decree No. 32/1990 dated July 25, 1990 on Cultivation of Protected Areas;
7. Presidential Decree No. 187/M/2004 dated October 20, 2004 as already amended several times and latest by Presidential Decree No. 20/P/2005 dated December 5, 2005;
8. Decree of the Minister of Mining No. 04/M/Pertamb/1973 dated March 22, 1973 on Prevention of Water Pollution in Oil and Gas Exploration and Exploitation;
9. Decree of the Minister of Environment No. 42/MENLH/10/1996 dated October 9, 1996 on Standards of Quality of Waste Water in Oil and Gas Activities;
10. Decree of the Minister of Environment No. 128/2003 dated July 38, 2003 on Technical Conditions and Procedure for Treatment of Oil Waste and Soil Contaminated by Oil;
11. Regulation of the Minister of Energy and Mineral Resources No. 0030/2005 dated July 20, 2005 on Organization and Work Procedure of the Ministry of Energy and Mineral Resources;

D E C I D E S :

To stipulate:

REGULATION OF THE MINISTER OF ENERGY AND MINERAL RESOURCES ON TREATMENT OF DRILL MUD, MUD WASTE, AND DRILL CUTTING IN OIL AND GAS DRILLING ACTIVITIES.

CHAPTER I GENERAL PROVISIONS

Article 1

Hereinafter referred to as:

1. Oil and Gas, Upstream Business Activities, Business Enterprise, and Permanent Establishment are as set forth in Government Regulation No. 35/2004 on Oil and Gas Upstream Business Activities as already amended by Government Regulation No. 34/2005.
2. Oil and Gas Drilling, which is hereinafter called Drilling, is an activity of making of well in Oil and Gas Upstream Business Activities.
3. Drill Mud is fluids used in drilling that contains Basic Substance or Additive, or a mix of Basic Substance and Additive.
4. Basic Substance is basic fluid of drill mud in form of water, oil, and synthetic materials.
5. Additive is additional materials for making of mud, in form of solid or liquid mixed with Basic Substance with a specific function.
6. Mud Waste is remains of use of Drill Mud in Drilling which is no longer usable.
7. Drill Cutting, which is hereinafter called Cutting, is remains and cuttings of waste from formations and waste water as a result of Drilling activities.
8. LC50 Test-96 hours (Lethal Concentration 50% for 96 hours), which is hereinafter called LC50 Test-96 Hours, is test into liquid chemical substance with calculation of a specific concentration may result in 50% death on the tested animals in 96 hours.
9. Toxicity Characteristic Leaching Procedure Test, which is hereinafter called TCLP Test, is test into Mud Waste to measure parameter of content or concentration of polluter in the leach.
10. Material Safety Data Sheet, which is hereinafter called

MSDS, is guidelines or directives for characteristics and composition of chemical substances and procedure of treatment and handling of the chemical substances issued by the manufacturer.

11. Directorate General is the Directorate for oil and gas.
12. Director is the Director for development and monitoring of work safety and environmental protection in oil and gas business activities.

CHAPTER II TREATMENT PROCEDURE

Article 2

Business enterprises or permanent establishments that operate Drilling must operate treatment of Drill Mud, Mud Waste, and Drill Cutting.

Article 3

- (1) In operating treatment of Drill Mud, as meant in Article 2, use of environment-friendly Drill Mud is necessary.
- (2) The Basic Substances used as the Drill Mud, as meant in paragraph (1), may be in form of:
 - a. Water;
 - b. Oil; or
 - c. Synthetic materials.
- (3) Additives used as Drill Mud, as meant in paragraph (1), are, among other things:
 - a. Ballast, such as barite, hematite;
 - b. Viscosifier, such as bentonite, polymer;
 - c. pH regulator, such as caustic soda (NaOH), potassium hydroxide;
 - d. Other additives, such as fluid loss control, shale stabilizer.

Article 4

- (1) Other than basic substances in form of water, the selection of Basic Substance, as meant in Article 3 paragraph (2), and Additive, as meant in Article 3 paragraph (3), for Drill Mud, must be based on the information written on MSDS and on toxicity.

- (2) The information, as meant in paragraph (1), must contain indicators, with LC50 Test-96 hours equal to or more than 30,000 ppm and/or TCLP Test.
- (3) If the information, as meant in paragraph (2), is not contained in MSDS, LC50 Test-96 hours and/or TCLP Test into Basic Substance and Additive must be operated.

Article 5

In operating treatment of Mud Waste and Drill Cutting, LC50 Test-96 Hours, oil content test, and/or TCLP Test must be operated.

Article 6

LC50 Test-96 hours, oil content test, and/or TCLP Test, as meant in Article 4 paragraph (3) and Article 5, are operated in accordance with the procedure stipulated in Attachment I to this Regulation.

Article 7

TCLP Test, as meant in Article 4 paragraphs (2) and (3), Article 5, and Article 6, must be in accordance with standards of quality of TCLP, as specified in Attachment II to this Regulation.

Article 8

- (1) Mud Waste and Drill Cutting may not be finally disposed into Sensitive Areas.
- (2) Sensitive Areas, as meant in paragraph (1), consist of areas that include protected areas, protected forest areas, turf areas, water absorption areas, coastal side, river side, areas around lakes/dams, areas around spring water, natural preserve areas and other water areas, coastal areas with mangrove forests, national parks, forest areas, natural recreational areas, cultural and science preserve areas, and disaster-sensitive areas, as set forth in Presidential Decree No. 32/1990 on Treatment of Protected Areas.
- (3) Final disposal, as meant in paragraph (1), is operated in accordance with the procedure set forth in Attachment I to this Regulation.

Article 9

- (1) Before operating Drilling activities, business enterprise or permanent establishment must convey plan for treatment of Waste Mud and Drill Cutting to the Directorate General.
- (2) The plan for treatment of Mud Waste and Drill Cutting, as meant in paragraph (1), is submitted along with and is a part inseparable from Environmental Treatment (UKL) and Environmental Monitoring (UPL) documents.
- (3) Drilling may be operated after the plan for treatment of Mud Waste and Drill Cutting, as meant in paragraph (1), and UKL and UPL documents are ratified by the Director General.

CHAPTER III

DEVELOPMENT AND MONITORING

Article 10

- (1) The Director General performs development and monitoring of activities of Drilling of Drill Mud, Mud Waste, and Drill Cutting.
- (2) The development and monitoring, as meant in paragraph (1), are performed by the Director.

Article 11

- (1) Business enterprise or permanent establishment must convey report on Operation of Treatment of Drill Mud, Mud Waste, and Drill Cutting to the Directorate General.
- (2) The report, as meant in paragraph (1), is submitted along with report of operation of UKL and UPL.
- (3) Format of the report, as meant in paragraph (1), is as specified in Attachment III to this Regulation.

CHAPTER IV

TRANSITORY PROVISIONS

Article 12

When this Regulation comes into force, for Treatment of Drill Mud, Mud Waste, and Drill Cutting which is

not in accordance with the conditions as set forth in this Regulation, the business enterprise or permanent establishment concerned must comply with this Regulation within not later than one (1) year since date of stipulation of this Regulation.

CHAPTER V
CLOSING PROVISIONS

Article 13

This Regulation comes into force since the date it is stipulated.

Stipulated in Jakarta
On July 20, 2006
THE MINISTER OF
ENERGY AND MINERAL RESOURCES
Sgd
PURNOMO YUSGIANTORO

ATTACHMENT I

PROCEDURE OF TEST AND DISPOSAL OF
MUD WASTE AND DRILL CUTTING

I. TEST

A. Procedure of Test

1. Treatment of Mud Waste

- a. On on-shore explorations wells, TCLP Test should be conducted when reaching total depth for each kind of mud. This is needed to ensure the existence of heavy metal in the drilled structured.
- b. On offshore explorations well, LC50 Test-96 hours should be conducted before mud is disposed to the offshore area, for each kind of mud, as material for evaluation in the next explorations program.
- c. On development wells, LC50 Test-96 hours and TCLP Test during use of the same kind of mud with the one at the time of Drilling at exploration stage are unnecessary.
- d. If the Basic Substance and Additive used are different, a repeat test is unnecessary.

2. Treatment of Drill Cutting

- a. On on-shore drilling, TCLP Test is unnecessary, but if heavy metal is found in the mud, Drill Cutting must be treated in a safe manner. If using oil and synthetic mud, test into oil content in Drill Cutting should be conducted at least once as long as oil mud is used.

- b. On offshore Drilling using oil and synthetic mud, test into oil content in Drill Cutting should be conducted at least once as long as oil mud is used.

B. Test into Toxicity, Heavy Metal, and Oil Content
Test into toxicity, heavy metal, and oil content in Mud Waste and Drill Cutting is conducted based on location of activities as follows:

1. Offshore

For offshore activities, the kind of test conducted is toxicity test on Mud Waste and test of oil content in Drill Cutting.

a. Toxicity test into Mud Waste

- 1) LC50 Test-96 hours must be conducted at least once into similar system of Mud Waste on the same structure in offshore drilling activities.

Limit of LC50 Test-96 hours into Mud Waste disposable to the sea is over or equal to 30,000 ppm of Suspended Particulate Phase (SPP).

- 2) Rate of toxicity of LC 50 is based on time of treatment during 96 hours of SPP on tested animals.

b. Test into Oil Content in Drill Cutting

- 1) On offshore treatment, hydrocarbon concentrate in drill cutting is lesser than or equal to ten percent (10%), so Drill Cutting is disposable to Drilling location, except to Sensitive Areas.

- 2) If hydrocarbon concentrate in drill cutting is over ten percent (10%), treatment must be conducted in accordance with the laws.

2. Onshore

For onshore activities, the kind of test conducted is TCLP test into heavy metal in Waste Mud and test into oil content in Drill Cutting

a. TCLP Test into Heavy Metal

- 1) TCLP Test is conducted into Mud Waste and Drill Cutting to determine criteria of place of disposal of Mud Waste and Drill Cutting onshore.
- 2) If TCLP rate for each parameter is lesser than the standards of quality as specified in Attachment II to this Regulation, Drill Cutting is disposable to the Drilling location, except to sensitive areas.
- 3) If TCLP rate is over or equal to the standards of quality as specified in Attachment II to this Regulation, Drill Cutting must be disposed to a special place having permeability over or equal to 105 cm/second.

b. Drill Waste/Waste Water

Waste water from process of separation of Mud Waste and water as its basic substance is disposable to the water body if the result of laboratory test is in accordance with the provisions of decree of the Minister of Environment No. 42/MENLH/10/1996 on Standards of Quality of waste Water in Oil and Gas Activities.

c. Oil Content in Drill Cutting

- 1) On onshore treatment, hydrocarbon concentrate in Drill Cutting of lesser or equal to one percent (1%) is disposable to Drilling location, except to Sensitive Areas.
- 2) If hydrocarbon concentrate in Drill Cutting is over one percent (1%), treatment is conducted in accordance with the laws.

II. FINAL DISPOSAL

A. Final Disposal of Mud Waste and Drill Cutting Offshore

Treatment and disposal of Mud Waste from Drill Cutting offshore include:

1. Disposal of Mud Waste and Drill Mud with water as basic substance.
In drilling activities at explorations stage, if result of LC50 Test-96 hours of fresh mud indicates a rate over or equal to 30,000 ppm,

Mud Waste is disposable to offshore, and if result of LC50 Test-96 hours into Mud Waste is lesser than 30,000 ppm, further treatment of Mud Waste must be conducted in accordance with the laws.

2. Disposal of Mud Waste from Drill Mud with oil and synthetic materials as basic substances
Mud Waste from Drill Mud with oil and synthetic materials as basic substances are reusable, and if disposal is conducted, it must be implemented in accordance with the laws.

3. Disposal of Drill Cutting

Drill Cutting with oil content of lesser than or equal to ten percent (10%) is disposable to offshore, and if oil content is over ten percent (10%), further treatment must be conducted in accordance with the laws.

B. Final Disposal of Mud Waste and Drill Cutting Onshore

Treatment and disposal of Mud Waste and Drill Cutting onshore include:

1. Disposal of Mud Waste and Drill Mud with water as basic substance.
 - a. Preparing and designing waste accommodating places in accordance with type of waste treated and condition of drilling location.
 - b. Implementing treatment at waste accommodating places that includes:
 - 1) Separation of solid and liquid waste;
 - 2) Separation of oil from liquid waste;
 - 3) Separation of soluble solids.
 - c. Separation of liquid waste and solid waste by devices.
2. Disposal of Mud Waste from Drill Mud with oil and synthetic materials as basic substances and disposal of Drill Cutting
 - a. Mud Waste from Drill Mud with oil as basic substance is reusable, and if it is disposed, disposal must be conducted in accordance with the laws.

- b. Treatment of Drill Cutting from Drill Mud with oil as basic substance is started by separating of oil and solids (de-oiling). The Drill Mud with oil as basic substance is reusable or recyclable. The solids are further treated until they are in accordance with the standards of quality as set forth in the laws.

C. Alternative Disposal of Mud Waste and Drill Cutting

Disposal of Mud Waste and Drill Cutting may be conducted by injection into formation or annulus or by other means of technology.

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ATTACHMENT II

**STANDARD OF QUALITY OF TCLP INTO
HEAVY METAL IN MUD WASTE**

No	Chemical Name	Symbol	Standard of quality, mg/l
1	Arsen	As	5.0
2	Barium	Ba	100.0
3	Cadmium	Cd	1.0
4	Chromium	Cr	5.0
5	Copper	Cu	10.0
6	Lead	Pb	5.0
7	Mercury	Hg	0.2
8	Selenium	Se	1.0
9	Silver	Ag	5.0
10	Zinc	Zn	50.0

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ATTACHMENT III

**FORMAT OF REPORT OF TREATMENT OF
DRILL MUD, MUD WASTE, AND DRILL CUTTING IN
OIL AND GAS DRILLING ACTIVITIES**

1. Name of Company :
2. Full address :
Phone :
Fax :
3. Party in charge (name and title) :
4. Location of activity :
a. Onshore/offshore :
b. Name of well :
c. Well's sub cavity :
d. Well's coordinate :
e. Well's status :
5. Type of mud :
6. Result of analysis of mud :
a. Drill cutting :
b. Drill mud waste :
(TCLP/LC-50)
7. Volume of drill mud waste : ... m3
8. Volume of drill cutting : ... m3
9. Treatment system :
10. Schedule of treatment of waste :

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