MANEJO INTEGRAL DE LOS RECORTES DE PERFORACIÓN DE LA INDUSTRIA PETROLERA EN TABASCO

INTEGRATED MANAGEMENT OF DRILL CUTTINGS THE OIL INDUSTRY IN TABASCO

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RESUMEN

Los recortes de perforación impregnados con lodos base agua y de emulsión inversa base aceite, son considerados residuos de manejo especial de acuerdo a la Ley para la Prevención y Gestión Integral de los Residuos del Estado de Tabasco, publicada en 2013. Hay que señalar que el estado no contaba con un instrumento de regulación para estos residuos; sin embargo, como resultado del trabajo donde se propone el Manejo Integral de los Recortes de Perforación de la Industria Petrolera en Tabasco, se logró que se considerara dentro de la propuesta de la Ley citada, que afortunadamente fue publicada en el Periódico Oficial del Gobierno del Estado. Este trabajo establece los lineamientos para realizar un manejo integral, consistente en la generación, almacenamiento, transporte, reciclaje, coprocesamiento, tratamiento y disposición final de los recortes de perforación, ya que estos residuos son generados en grandes cantidades por la industria petrolera en Tabasco, especialmente en el proceso de perforación.

Palabras clave: manejo integral, recortes de perforación, residuos de manejo especial, reusar, tratamiento.

Abstract

Cuts impregnated drilling muds water and oil-based invert emulsion are considered special waste management according to the Law for the Prevention and Management of Waste in Tabasco State, published in 2013. Should be noted that the state did not have a regulatory instrument for these wastes; however, as a result of work where the Integrated Management of drilling cuttings of the Oil Industry in Tabasco aims was achieved which was considered in the proposal of the Act, which fortunately was published in the Official Gazette of the Government of state. This paper provides guidelines for integrated management, involving the generation, storage, transportation, recycling, coprocessing, treatment and disposal of drill cuttings, as these wastes are generated in large quantities by the oil industry in Tabasco, especially in the drilling process.

Key words: integrated management, drill cuttings, special handling waste, refuse treatment.

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Introduction

Drill cuttings according to NOM-115-SEMARNAT-2003, are rock fragments obtained from the drilling process; made of perforated formation minerals, among others, clays, quartz, feldspar, carbonates and other calcareous and silica compounds which are impregnated with drilling fluids; in the figure below examples of drill cuttings is.

Have as legal basis the entry into force of the General Law for the Prevention and Integral Management of Wastes (LGPGIR) in 2003, where the distribution of powers to the federation is required, states and municipalities, environmental regulation the management of waste, both hazardous and special handling municipal solid. Corresponds to the federation regulate hazardous waste, the waste states and municipalities special handling municipal solid waste.

Within the regulation of waste requiring special handling by the states, it is contemplated to waste cuts impregnated based drilling fluids water and invert emulsion base oil from the oil industry, originated in the stage of drilling wells Oil tankers in the state of Tabasco.

In 2008, 334,000 tons of drill cuttings derived from exploration and production activities and generated in the Samaria-Luna integral business unit, in the period January to December 2011, was 25,729.39 tons.

The Ministry of Energy, Natural Resources and Environmental Protection (SERNAPAM) works consistent with the National Development Plan 2007-2012, which provides, in seven shaft transformer, the strategy for the design and implementation of policies and programs to control and reduction of pollution of soil, air and water through the line of action to implement the state program of waste management special management. For such, it requires mechanisms for evaluation and methodological capacities for the environmentally sound management of wastes requiring special handling, including assessment of the technologies used.

This work was conducted in two stages, the first stage was to make a diagnosis of generation and physico-chemical composition of drill cuttings in the oil industry and the second stage performing the proposed management of drill cuttings in line with the Law General on the Prevention and Integral Waste Management and its regulations, as well as the Law on Environmental Protection and the State of Tabasco Law for Prevention and Integrated Waste Management of Tabasco.

The management proposal includes the appropriate storage sites in temporary generation and transfer sites, transportation of cuts in equipment and means of transport as gondolas, pipes and turnings with all safety equipment and guidelines established by the Secretariat Communications and Transport, the treatment will be applied to cuts, according to the authorizations and business processes by the state environmental authority, recycling and disposal.

DEVELOPING

The work was developed in two stages, the first stage accounted for performing consultative forum called "Forum on Management of Waste Drilling Petroleum Industry in Tabasco 2012" on the premises of the Technological University of Tabasco, with the participation of 60 people from

18 companies that perform or provide services to the oil industry, which were distributed at four tables of analysis and discussion. They talked about the issues and generating drill cuttings treatment of drill cuttings, transport of drill cuttings, regulation and management of drill cuttings.

Later visits to four oil installations, specifically drilling oil wells, located in the municipality of Cunduacán, Tabasco were made. These tours realized drilling areas (equipment), storage area of drilling fluids and drill cuttings, verifying the generation of water-based drilling cuts and base oil used and the form of management that is applied to cuts drilling, generating diagnosis as product waste generation cuts impregnated water-based drilling fluids and invert emulsion base oil caused by the oil industry considered special handling, which showed that the annual rate of distributed generation in active Samaria -Luna, in the period January to December 2011, it was 25,729.39 tons.

Also, visits to treatment facilities drill cuttings were conducted to understand the processes of treatment, management that is applied to the waste before treatment and treatment, the existing infrastructure and emergency mechanisms applied.

For the second stage, it is preparing the proposal for integrated management of drill cuttings from the oil industry in the state of Tabasco, considering the criteria for this evaluation, validation and authorization of testing protocols for handling technologies and treatment waste cuts impregnated water-based drilling fluids and invert emulsion base oil caused by the oil industry considered special handling, types of transport used, the system of temporary storage as well as the recovery and / or reuse.

Identification of processes where it is generated drill cuttings

Drilling is a process which involves making a vertical underground shaft, inclined or horizontal, to reach average depths ranging from 3-6 kilometers long in order to get to places known as possibly producing hydrocarbon formations.

For the drilling process is essential to use drilling fluids or muds, they are used in which case drilling mud or lubricants are blends with many chemical additives.

Importantly, in the drilling stage large quantities of solid or drill cuttings are generated. If you have a typical well of 16,000 feet (about 5 kilometers) deep they can be generated 4,000 barrels of drill cuttings, which are mainly composed of sand, clay, minerals and additives. The biggest drawback in this case is not caused by the volume of solids generated, but the toxicity of these as they were in constant contact with the drilling fluid, which is very common to have cuts with oil impregnation or any other contaminants.

The volume of scrap generated depends on the depth and hole diameter. The solids are continuously removed via the solids control equipment. The largest volume is generated in the initial stages where the hole diameter is greater, the download may be going on for continuous and intermittent periods of less than 1 and up to 24 hours per day, depending on the type of operation and characteristics of the well.

COMPOSITION drill cuttings

The composition of water-based drilling cuts and base oil, is related to the types of hydrocarbons and organic and inorganic compounds, which were analyzed by a laboratory accredited by the Mexican Accreditation and laboratory listed below.

a) water-based drilling cuttings

PARÁMETRO	MÉTODO ANALÍTICO	UNIDADES	RESULTADO
HIDROC. FRACC. PESADA	EPA 1654A/9071B-1996 A3 NOM-138-SEMARNAT/SS-2003	Mg/Kg, B.S.	54836.48
Humedad	AS-05	%	85.9
BTEX B.S.			
Benceno	EPA 8260-B 1995. NOM-138-SEMARNAT/SS-2003 AN A4	Ug/kg, B.S.	ND
Tolueno	EPA 8260-B 1995 NOM-138-SEMARNAT/SS-2003 AN A4	Ug/kg, B.S.	12420.61
Etilbenceno	EPA 8260-B 1995 NOM-138-SEMARNAT/SS-2003 AN A4	Ug/kg, B.S.	26295.65
M,P-Xileno	EPA 8260-B 1995 NOM-138-SEMARNAT/SS-2003 AN A4	Ug/kg, B.S.	86380.50
O-Xileno	EPA 8260-B 1995 NOM-138-SEMARNAT/SS-2003 AN A4	Ug/kg, B.S.	54457.56
HIDROC. FRACC. MEDIA	EPA 8015B-1996, NOM-138-SEMARNAT/SS-2003 AN2	Mg/Kg, B.S.	138000.40
>C10<C15	EPA 8015B-1996, NOM-138-SEMARNAT/SS-2003 AN2	%	45.33

>C15<C20	EPA 8015B-1996, NOM-138-SEMARNAT/SS-2003 AN2	%	39.61
>C20<C25	EPA 8015B-1996, NOM-138-SEMARNAT/SS-2003 AN2	%	12.05
>C25<C28	EPA 8015B-1996, NOM-138-SEMARNAT/SS-2003 AN2	%	3.01

PARÁMETRO	MÉTODO ANALÍTICO	UNIDADES	RESULTADO
HIDROC. FRACC. LIGERA	EPA 1654A/9071B-1996 A1 NOM-138-SEMARNAT/SS-2003	Mg/Kg, B.S.	79305.9
<C5	EPA 8260-B 1995. NOM-138-SEMARNAT/SS-2003 A1	Ug/kg, B.S.	0.005
>C5<C10	EPA 8260-B 1995 NOM-138-SEMARNAT/SS-2003 A1	Ug/kg, B.S.	99.994
CONSTITUYENTES INORGÁNICOS (METALES)			
Arsénico	EPA 6010B-1996	Mg/L	0.0169
Bario	EPA 6010B-1996	Mg/L	1.6720
Cadmio	EPA 6010B-1996	Mg/L	0.0117
Cromo	EPA 6010B-1996	Mg/L	ND
Mercurio	EPA 7471A-1995	Mg/L	ND
Plata	EPA 6010B-1996	Mg/L	ND
Plomo	EPA 6010B-1996	Mg/L	86180
Selenio	EPA 6010B-1996	Mg/L	0.0223

Table 1. Composition of water-based drilling cut. Source: Chromatographic analysis performed by accredited laboratory.

b) oil-based drilling Scraps

PARÁMETRO	MÉTODO ANALÍTICO	UNIDADES	RESULTADO
HIDROC. FRACC. PESADA	EPA 1654A/9071B-1996 A3 NOM-138-SEMARNAT/SS-2003	Mg/Kg, B.S.	54836.48
HIDROC. FRACC. MEDIA	EPA 8015B-1996, NOM-138-SEMARNAT/SS-2003 AN2	Mg/Kg, B.S.	138205.00
HIDROC. FRACC. LIGERA	EPA 1654A/9071B-1996 A1 NOM-138-SEMARNAT/SS-2003	Mg/Kg, B.S.	48.51
BTEX B.S.			
Benceno	EPA 8260-B 1995. NOM-138-SEMARNAT/SS-2003 AN A4	Ug/kg, B.S.	ND
Tolueno	EPA 8260-B 1995 NOM-138-SEMARNAT/SS-2003 AN A4	Ug/kg, B.S.	ND
Etilbenceno	EPA 8260-B 1995 NOM-138-SEMARNAT/SS-2003 AN A4	Ug/kg, B.S.	ND
M,P-Xileno	EPA 8260-B 1995 NOM-138-SEMARNAT/SS-2003 AN A4	Ug/kg, B.S.	ND
O-Xileno	EPA 8260-B 1995 NOM-138-SEMARNAT/SS-2003 AN A4	Ug/kg, B.S.	0.19635
CONSTITUYENTES INORGÁNICOS (METALES)			
Arsénico	EPA 6010B-1996	Mg/L	ND

Bario	EPA 6010B-1996	Mg/L	41140
Cadmio	EPA 6010B-1996	Mg/L	ND
Cromo	EPA 6010B-1996	Mg/L	ND
Mercurio	EPA 7471A-1995	Mg/L	0.0002
Plata	EPA 6010B-1996	Mg/L	ND
Plomo	EPA 6010B-1996	Mg/L	34830
Selenio	EPA 6010B-1996	Mg/L	ND

Table 2. Composition of oil-based drilling cut. Source: Chromatographic analysis performed by accredited laboratory.

a) COMPREHENSIVE MANAGEMENT

Storage

The cuts and waste produced during drilling with water-based fluids are deposited in a dirt enclosure 45 x 20 x 2 m, waterproof and roofing. Similarly, cuttings produced during drilling with invert emulsion fluid, are disposed of concrete confinement 20 x 15 x 2 m, waterproof and roofing.

Another common practice is the dam storage of waste, which must be built dirt, compaction following the procedures required to prevent infiltration into the subsoil, some of them with geomembrane on the walls to avoid this problem. Dams have dimensions of approximately 20 x 20 x 1 m, which cuts impregnated based drilling fluids accumulate water. After completion of drilling, the fluid stored in the reservoirs, known for being clean water based mud is transported to other prey.

b) Transportation

For the transport of drill cuttings by land must comply with the following parameters.

The carrier responsible for the removal of the cuts must go with the documentary and physical control over the management of the cuts.

Under no circumstances should exceed the speed of 10 km / h in oil facilities. For traffic out of oil installations must be complied with speed limits established in NOM-EM-033-SCT-2-2002 and the provisions laid down by local authorities as appropriate.

Should the service provider or contractor causes damage to third parties, this will make the payments and compensation from.

It is not allowed to perform maintenance on oil transportation facilities.

The service provider or contractor performing the inland transport of cuts must have the contingency plan approved by the environmental agency in the state of Tabasco.

The service provider or contractor for ground transportation, must meet the requirements established by current regulations on environmental matters and have current permits or authorizations requested by the Secretariat of Communications and Transportation, or the competent authority as appropriate.

The service provider or contractor must have operators for the transport of cuts that meet the technical and regulatory expertise in industrial safety and waste management.

In Mexico, the environmental legal framework defining the rules governing the transport of waste requiring special handling, is comprised of the General Law for Prevention and Integrated Waste Management and Regulations, as well as the Regulation for the Land Transport Hazardous Materials and Waste.

As the transport of special waste handling is an activity in which the Secretary of Energy, Natural Resources and Environmental Protection and the SCT are competent, by linking these two authorities have allowed an evolution and improvement in the integrity control transport process through the issue of specific permit for this activity.

The above and additional requirements are clearly stated in the reference guide for Transportation of Hazardous Waste SEMARNAT, because the state has no regulations on the subject, as mentioned below:

I. Issuance of permits for the operation and exploitation of federal motor carrier services of specialized materials, residues, remnants and waste requiring special handling for the SCT and the SERNAPAM load.

II. As required by Article 80 of the LGPGIR, people interested in obtaining authorization to perform services for third parties to transport, collection, storage, reuse, recycling, treatment and disposal of waste, as appropriate, shall submit to the Ministry an application for approval (SEMARNAT-07-033-I), this document must contain the following information.

III. Manifesto activity log of hazardous waste management, which aims to ensure that the RP appointed to be collected, transported and delivered to external sites for treatment, storage and disposal arrive intact at their destination, because in waste characteristics and loading and delivery points specified this format; in addition to being a management guide, by staff in case of an incident or accident.

IV. Changing registries and authorizations hazardous waste material in the areas of data update records and authorizations, notice of modification to the authorization change corporate name or to transfer authorizations on hazardous waste.

V. Notice of spillage, infiltration, discharge or disposal of hazardous materials or hazardous waste:

For Immediate Release mode (PROFEPA-03-017-A), which has as main objective to know immediately of a danger to the environment on the part of those responsible for the handling of hazardous materials or waste.

SAW. Issuance of permits for the operation and exploitation of federal motor carrier services of specialized cargo materials, waste and hazardous waste remaining for both legal entities and physical (SCT-03-040-A / SCT-03-040-B).

VII. Issuing permission for the operation and use of the services of private transport cargo specialized materials, waste and hazardous waste remaining for both legal entities and physical (SCT-03-044-A / SCT-03-044-B).

Collecting mud and drill cuttings is performed using gondolas and pressure and vacuum pipes. The following table lists the features, capabilities and safety of each harvesting equipment shown.

Tipo de equipo de recolección	Descripción	Capacidad	Medidas de seguridad
Góndola	• Largo 9 m, ancho 2.60m y alto 2m. • Dos ejes 30,000 lbs. • Suspensión neumática • Dos pernos key • Porta llanta. • Dos patines de velocidades • Ocho llantas r-24.5 y rin r-24.5 • Gancho de arrastre • Luces reglamentarias • Equipo hidráulico pistón telescópico • Cinco secciones con extensión a 220 • Rompe ola	30 m^3 y/o 25 toneladas	Colocación de geomembrana para evitar derrames. Tornillos de seguridad en la parte trasera para evitar escurrimientos.
Pipa de presión y vacío	• Tanque cilíndrico • Acero al carbón	30,000 litros	Dos válvulas de esferas de 3 pulgadas, parte trasera con charola. Válvula de 2 pulgadas.

Table 3. Characteristics of sludge collection equipment and drill cuttings.

b) Reuse

Drilling cutting small pieces are generated by the action of breaking the bit in its penetration in the crust, which are carried to the surface by the fluid. The volume of scrap generated depends on the depth and hole diameter.

The solids are continuously removed via the solids control equipment. The largest volume is generated in the initial stages, where the hole diameter is greater, the download may be going on for continuous and intermittent periods of less than 1 and up to 24 hours per day, depending on the type of operation and characteristics of the well. Thus, the total solids may be at least equal to the hole volume, and sometimes higher, however, the separated solid is usually less since a large amount of them is dispersed in the fluid. About its characteristics, cutting alone is an inert solid, but solids drilling fluid may contain debris attached to them. The composition or contaminants

will depend on the used fluid. So cuts associated with the use of oil-based fluids may submit hydrocarbon content. Maintaining high efficiency solids control equipment, it is possible to achieve a solid concentration up to 96%, with the remaining 4% drilling fluid adhered.

There are different alternatives for reuse drill cuttings then mentioned some of them.

Coating roads

This residue can be used as road surfacing mixture, having characteristics of mixture density and content consistent with approved for road asphalt or mixtures metals. In direct applications by the same generator sections of public and private roads, it must be in relationships loads to reduce the possibility of surface runoff and attached to local regulations. The regulations must be observed is related to asphalt mixes and materials for the construction of roads in the Secretariat of Communications and Transportation.

However, other materials exists within the drilling considered as waste and which can be reused, such as:

b) Recycling

It is important to remember that, although recycling helps conserve resources and reduce waste, there are economic and environmental costs associated with the collection and recycling processes. That is why one should consider the case for recycling waste which can not be reduced or re-use.

The waste of a company can be raw material for another company.

It means recycling a waste product that has been used the full scrap or "goes to" the recycling process.

Recycling can be a win-win measure.

The company eliminating waste saves the cost of transport and disposal of waste, while the user saves on the costs of raw materials.

This alternative involves the conversion of waste to extract usable material and / or energy recovery of valuable materials from them. Recycling helps preserve the riches and reduce waste, it is important to know that there are economic and environmental costs that are associated with the collection of waste and recycling processes. Therefore, the recycling must be considered only for waste that can not be reduced or reused in the same process. The residues of these activities, may be in a given raw material to be used in other activities time.

Coprocessing

An alternative for the future use of untreated drill cuttings or treatment by some of the co-processing technologies is approved for the production of cement. In Tabasco it has a cement plant receiving these types of waste; Furthermore, the distance makes it attractive and economical.

Treatments

Usually, the environmental area must keep details of the "pros" and "cons" of each type of treatment to apply feasible and applicable regulations in effect since them based on the risks and costs are determined and how to remove the residue. It should be noted that only after analyzing the above information will be convenient to carry out an assessment of the treatment technology.

The five main types of waste processing interrelated with the waste are:

• Physical treatment. Processes in which by concentration and / or phase change hazardous constituents to a more convenient form for subsequent management change.

• Chemical treatment. Processes where the hazardous constituents are modified by chemical reactions. In some cases tantamount to a neutralization of the danger; in other exceptional cases, the waste may still be dangerous but in a form suitable for further handling.

• biological treatment. Modifications or diminution of the concentration are made by the action of soil bacteria themselves, and applies to both hazardous and non-hazardous waste.

• Heat treatment. Process in which high temperature for the destruction of toxic used primarily organic.

In the state of Tabasco the Secretary of Energy, Natural Resources and Environmental Protection (SERNAPAM) authorized some technologies for the treatment of water-based drilling cuttings base oil and the oil industry, which are mentioned below:

TECHNOLOGIES	TYPE OF PROCESS
a) Treatment "in situ" or "onsite" special handling waste (muds and cuttings impregnated water-based drilling fluid and base oil) by centrifugation and chemical oxidation.	• Physical process
b) Disposal of special handling (muds and cuttings oil based drilling fluids) through physicochemical technology destabilization.	• Chemical process
c) Waste requiring special handling (muds and cuttings from water-based drilling fluid and base oil) through chemical stabilization technique.	• Physical process
d) Waste requiring special handling (muds and cuttings from water-based drilling fluid and base oil) by chemical oxidation technique.	• Chemical process
e) Waste requiring special handling (muds and cuttings impregnated water-based drilling fluid and base oil, land and materials like contaminated soil and / or impregnated by mud and drill cuttings water based and oil based fluids) by degradation of pollutants by the physical phase oxidation, chemical-degradation biochemistry, applied in three treatment modalities "Ex Situ", "OnSite" and "In Situ".	• Chemical process
f) Treatment "in situ" or "onsite" special handling waste (muds and cuttings impregnated water-based drilling fluid and base oil) by biochemical degradation	• Chemical process
g) off-site treatment of waste requiring special handling (muds and cuttings from water-based drilling fluids, base oil, sludge from the treatment of oily and sanitary) water using bioremediation and soil washing.	• Physical process

h) Treatment of special handling waste (muds and cuttings from water-based drilling fluids) by physical, chemical and biological methods.	• Chemical process
i) Waste special handling (muds or cuttings impregnated oil based drilling fluid) through chemical desorption process (chemical oxidation and steam stripping),	• Biological Process
j) Waste requiring special handling (muds and cuttings from water-based drilling fluids) through the washing technique.	• Chemical process
k) Treatment ex situ management of special waste (muds and cuttings impregnated water-based drilling fluid) through dehydration process.	• Biological Process
l) ex situ treatment of waste requiring special handling (cuts impregnated water-based drilling fluid and base oil, settled sludge resulting from the treatment of sanitary wastewater treatment sludge sedimented oily industrial water) by soil washing technology and biological degradation.	• Physical process
m) Waste requiring special handling in situ and ex situ (muds and cuttings impregnated water-based drilling fluids, base oil and soil contaminated with waste) by means of the technique of biostimulation / degradation.	• Biological Process
n) Treatment ex situ and in situ management of special waste (muds and cuttings from water-based drilling fluid and base oil), contaminated soils and water cuts based base oil.	• Physical process
o) treatment of waste requiring special handling (muds and cuttings impregnated water-based drilling fluid) through chemical oxidation techniques and desenmulsificación.	• Chemical process

Table 4. authorized by SERNAPAM to drill cuttings in the state of Tabasco treatments. Source: Analysis of the potential applicability of technologies for the treatment of special waste to the specific conditions of the state of Tabasco management.(Villegas, 2013)

b) Disposal

From the information gathered may establish four disposal procedures, which are:

- Provision on land as filler.

- Injection cuts.
- Storage in controlled confinement.
- Proper closure of the dams during abandonment activities.

In its application shall be taken into account, inter alia, the following considerations:

• The arrangement should be developed in a safe and responsible manner.
• The stroke volume of the liquid phase of the dams should be controlled so that the liquid does not drain in places that are not intended for disposal.
• The provision should not cause erosion. The land used for the disposal may not be as steep nor as having little vegetation that can not contain the rampant flow of liquid. The ground should be leveled.
• No surface water should be used for disposal.
• The risk of contamination of ground water flow should be minimal. This prevents the removal of granular soil.
• thin land should be avoided as a skeletal soil over bedrock.

Provision ground as filler

This option requires prior treatment such as; solids concentration / dehydration solidification / stabilization and solidification likely.
In the south it has been implemented treatment for disposal of 3,009 tons of cuts through the encapsulation process, which is done through a specialized company. Until the first half of 1994, had been treated by this process about 600 tons. Encapsulated cuts were donated to the City of Paradise, Tabasco, for use as a filler, upon release by the Ministry of Environment and Natural Resources (formerly SEDESOL).

Controlled confinement

The disposal of solid, drill cuttings in controlled confinement, an alternative often recommended. This disposition is what is best developed based on engineering judgment. The facilities are

secure landfill to deposit waste in a controlled, classified and durable. Residues in most cases require pre physicochemical treatment and incineration (detoxification, dehydration, volume reduction).

To avoid adverse environmental effects, the confinement should be conducted under the following criteria:

1) Careful site selection
2) Construction, operation and criteria as guidelines
3) appropriate coating
4) after coating Care
5) monitoring of groundwater and leachate, and
6) Recording of data.

A confinement can not be sent sludge or drill cuttings, if they have free liquids to be separated from the solid portion under normal conditions. It is necessary that the waste is first: dehydrated, detoxified and neutralized by physical treatment processes and chemicals, besides meeting the constraints governing the operation of a landfill.

CONCLUSIONS

In the state of Tabasco, the oil industry has been and continues to conduct prospective studies for the discovery of new oil fields and has continued with the drilling of wells in different production assets in the state. This requires a large amount of sludge or drilling fluid lubricates the augers so that these are not damaged or stuck and have considerable losses in the operation is used.

Drill cuttings are produced at the stage where the fluids are mixed with rocky soil and remantes and emerge through the pipes to the outside, which are recepcionados by downloading a temporary storage tanks. A portion of the sludge is recovered as cuts and the rest are sent through transport equipment designed for that purpose in gondolas or pressure and vacuum pipes.

According to the provisions of the Mexican Official Standard NOM-052-SEMARNAT-2005, it states that drill cuttings are not considered hazardous waste, so according to the General Law for the Prevention and Management of Waste, It classifies as special management waste. Similarly,

the Law for the Prevention and Management of Waste of the State of Tabasco, considered as a special management waste, so it is up to the institution to regulate its use.

In that sense, it was held the Forum on Waste Management of the Oil Drilling Industry in Tabasco 2012, for current driving situation that is performed in drill cuttings, participating government agencies on environmental issues The oil industry, environmental consultants, service companies for the oil industry and educational and research institutions.

Furthermore, a diagnosis of generation and management of drill cuttings are conducted, taking as a case study the integral active Jujo-Reformation, two oil facilities and two service companies treat drill cuttings located in the state of Tabasco.

With these assumptions, the proposed Comprehensive Management of drill cuttings from the oil industry in Tabasco was designed so that the dependency rules consider it as part of the management of the parastatal and all those companies that give services to Petroleos Mexicanos and involving waste. This proposal considers the minimum elements necessary to comply with state environmental standards in areas of storage, transportation, reuse, recycling, treatment and disposal.

In addition, the legislation failed to consider these aspects in the Law on Prevention and Management of Waste of the State of Tabasco and establish testing protocol for authorized and approved terms of reference and treatments.

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