

IMPACT ON THE ENVIRONMENT OIL EXTRACTION

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ABSTRACT: This paper presents the history of oil extraction techniques and the environmental impacts

KEY WORDS: oil extraction, impact, techniques

1. GROUND - GENERAL PROPERTIES

Soils are the result of interaction of the land area. Soil is a layer dynamic content which is conducted continuously numerous and complex chemical processes, physical, biological. On land where the earth's crust is in close interfering with atmospheric air, moisture and thermal regime change, it has developed a thin blanket of soil (30 to 200 cm).

The soil composition comprises:

1. inorganic particles: from alteration of rocks of support

2. organic particles: results of decomposed plant and animal substances (roots, fungi, bacteria, worms, insects, rodents) that can be sized colloidal grain to assist in forming humus that gives soil fertility.

3. Water: the soil can become a complex chemical solution, which ensures the necessary reactions of soil functions.

4. gases: the atmospheric air being transformed into the open pores due to reactions in the soil.

The soils were formed in a long period of time. The rocks on the surface of the lithosphere, as produced by the disintegration (differences in temperature, frost) and the processes of chemical decomposition (due to water infiltration) crumbles into particles larger or smaller: gravel, sand, clay, dust.

They are made and the plant and animal residues. The transformation of vegetal remains

an important role some small organisms called bacteria that turn those scraps into humus. A contribution to soil formation has seeping water, which dissolves certain nutrients in the soil. Plant roots absorb water with nutrients. The air in the soil is derived from the atmosphere and it is necessary to vent the soil.

2. HISTORY

Oil was discovered thousands of years ago. Having a density less than salt water, it has been found in sedimentary layers cavities and areas with limestone, clay or sandy surface.

Oil located on the surface layers of the oxidation converts the asphalt and already found in the East in the latter by approx. 12 000 years ago in ancient Mesopotamia.

People have learned to use asphalt, mixing with sand and other materials sealed walls of ships.

Petroleum is a word of Roman origin that comes from "oleum rock" = oil stone name the Romans took it from the Egyptians, who discovers oil at the surface region of mountains Gulf of Suez is assumed that in ancient Romans used oil as a lubricant the axle Roman or Byzantine during this part of the Greek fire was a feared weapon in the naval battles of yesteryear.

3. GENESIS OIL

Biogenic theory of oil formation argues that oil is formed from marine organisms (plankton) that after death were deposited on the seabed sediment being repaid. According to this theory of oil formation period of time spanning approx. 350 – 400 millions years ago (Devonian) period that took place among the flora and fauna mass mortality explained by the theory that giant meteorite fell to Earth in that period, triggering high temperatures and pressures.

Abiogenic theory (it has fewer followers) oil would result in minerals, rocks with a high content of carbon and hydrogen having a specific gravity less were pressed to the surface.

4. OIL EXTRACTION

If oil deposit is near surface exploitation can be achieved by surface quarries, while deposits are extracted by the depth of oil wells (drilling depth).

Another way is to extract oil extraction from fields using subsea drilling platforms where drilling difficulties are much higher. For all methods of drilling the well fluid is used to stabilize the borehole fluid that requires a higher specific gravity.

The drilling head is provided with cutting edges of diamond tip, the probe and the column is made up of steel tubes which are mounted together by screws (one to another), the column length reaching up to several thousand meters.

In Fig. 1 shows two techniques for extracting oil (a - on land, b - sea)



Fig. 1. Techniques for extracting oil

5. SPECIFIC WASTE AND SOIL REMEDIATION OIL INDUSTRY

5.1 Sources and types of specific waste oil

Following the activities in the oil industry, from extraction and especially in the refining and petrochemicals, in addition to main products, it follows a series of wastes (waste) oil that no longer worked, but stored in specially designated areas generating industrial units in the vicinity. Oil sludge deposits exist in all traditional areas of oil in the country. It is estimated that such oil waste accumulations totaling approximately 1.5 million b.w., including them and those in refineries. Such a way of solving the problem is inadequate in at least three reasons:

- Large areas of arable land are set aside, being affected in this way agricultural production;
- Because not recovered and recovered significant material resources, this is an uneconomic solution;
- Produce large medical shortcomings in terms of population for that pollute the environment.

Due to industrial development is increasing the amount of waste generated, which can no longer be treated and reintegrated into the environment causes an increase in environmental pollution. The accumulation of such waste, most often uncontrolled, leading to altered environmental factors that create, finally, numerous imbalances in the environment at all levels: flora, fauna, health. Unfortunately, the oil industry is among the most polluting industries, most of the waste oil generated are hazardous waste.

The largest quantities of waste oil are located in Prahova, Arges, Bacau, Bihor, Constanta where there is oil processing units, but also in large industrial centers and conurbations such as Bucharest. At the current level of technical and technological development, waste of this type have not found a proper use. Along with other hazards to the environment, they show a high toxicity and because they occupy storage space required their destruction. Method of optimal management of waste oil that takes into account their specific characteristics is thermal treatment (incineration or use in cement kilns).

Among the many sources of waste own refinery and petrochemical sector mention: tars acidic soil used (slurry), deposits of tanks for storing petroleum products (including those from catalytic processes), spent catalysts (from diverse manufacturing processes), various petroleum residues, organic solvents, halogenated compounds, macromolecular compounds sludge from waste treatment plants biological sewage refinery.

Acid tars, as waste, resulting from the refining of petroleum fractions acid (oil medol, cosmol, paraffin etc.), presenting himself as a very viscous liquid which includes products of organic nature (sulfonic acids, polycyclic aromatic hydrocarbons, hetero sulfur, oxygen and nitrogen, the condensation products of olefins) together with unreacted sulfuric acid. Despite the efforts made over the years, they have not found any use being stored in pits. Trying incineration of these tars, neutralized with calcium hydroxide proved to be ineffective because of the emergence of strong emission of sulfur oxides, which pollutes the environment. For example, the "Rompetrol Rafinare - Vega Refinery" S.A.

Ploiesti acidic tars and debris from pits are processed "Ecomaster" in order to eliminate them and to decontaminate the soil and subsoil. From the refining process by contact with bleaching earth (bentonite) is clear of the ground spent oil which contains product in varying proportions. Trying to regenerate the land used has proved to be a difficult operation practically uneconomical because by calcination at high temperature bleaching earth loses its activity.

Reactivation earth regenerated by treatment with mineral acids gave only partial results. Oil recovery gave favorable results held concurrently with the reactivation of the earth adsorbent by treatment with a mixture of benzene and ethanol but due to high costs involved, the process was abandoned.

Tanks for storing oil produced from processes Catalytic occurring deposits which

drives the catalyst fine particles that can not be separated by gravity.

On the bottom of storage tanks for oil and petroleum products shall be submitted in time deposits consist of mechanical impurities contained, which includes adsorption and petroleum products.

Other sources of its oil industry waste are spent catalysts, from diverse manufacturing processes; various oil residues; organic solvents; halogenated compounds; macromolecular compounds (polystyrene, polyvinyl chloride, rubber, polyethylene, etc.); sludges from wastewater treatment plants Biological sewage refinery.

5.2. The impact of the presence of waste from the oil industry on environmental quality

The main element affected by waste from operating activities, processing, transport and distribution of the petroleum industry is its own environment, the environmental impact on soil, vegetation and fauna is different from case to case, and each time causing damage worth taking into account and prevented.

Cover damage to the environment, which not infrequently causes and consequences of human drives usually cost greater than compliance with appropriate management of reservoirs in use, waste and residues. Waste oil and petrochemical nature is a powerful source of environmental pollution: air, water, soil. In petroleum residues focuses both aromatic hydrocarbons such as benzo - pyrene, benzoantracenu, dibenzoantracenu etc. showing carcinogenic action on the human body, especially the hetero sulfur, nitrogen, oxygen is produced at particular risk in terms of pollution. Other wastes containing halogenated ethers, phenolic compounds etc.

Residues from the oil industry can get into the environment and the movement of the exchange of matter (water, vegetable, etc.) can reach the human body.

The strongest phytotoxic action have ring aromatic hydrocarbons present as such or formed by the metabolic processes of decay.

Improper storage and treatment of waste industry oil can lead to pollution of the atmosphere. The decomposition of organic substances containing waste is accompanied by the release of malodorous gases. The wind and air movements raises dust from the piles of waste, polluting the atmosphere.

Following self-ignition to the storage of oil residues occurring products of combustion (smoke, soot, ash), which pollutes the environment large expanses. Following discharge (storage) inadequate oil residues from refineries, in addition to the negative consequences of environmental pollution, should be considered, not least, depreciation and aesthetic appearance of the landscape.

Storage containers of waste oil production must be kept cool and the temperature increase if risk reduction measures are required of it by spraying with water spray. Consequently, even these deposits poses a risk of negative impact on the environment and public health.

Waste from the dismantling of decommissioned machines are often stored in unsuitable areas, near rivers, crops or land inhabited without pre-cleaned of debris. The effects are multiple: soil, groundwater infection, leakage caused by rain in riverbeds, involving such consequences toxic to aquatic organisms.

For example, the dismantling of ethylation petrol stations require leaded neutralizing the treated improperly, might adversely affect the environment around the unit, and those who, for one reason or another, come into contact with the chemical. Therefore, dismantling tanks, piping and doping them with wooden plugs is not enough, it is necessary to clean the remains of their leaded rust layer and infested with this substance.

The degree of civilization that mankind has now reached it requires orientation towards finding effective solutions for the collection, transport, storage and recovery of waste oil and petrochemicals.

CONCLUSION

1. Following the activities in the oil industry, from mining, but especially in the refining and petrochemicals, in addition to main products, follows a series of wastes (waste) oil that no longer worked, but stored in specially designated areas located near industrial units generators. Among the many sources of waste sector's own refining and petrochemicals can be mentioned: acid tars, earth dead (slurry), deposits of tanks for storing petroleum products (including those from catalytic processes), spent catalysts (from diverse processes processing), various petroleum residues, organic solvents, halogenated compounds, macromolecular compounds (polystyrene, polyvinyl chloride, rubber,

polyethylene, etc.), sludges from wastewater treatment plants biological sewage refinery.

2. Waste from the oil industry are stored in pits, usually scantily furnished called pits in close proximity to scaffolding oil refineries respectively.

3. Waste oil and petrochemical nature is a powerful source of environmental pollution: air, water, soil. Residues from the oil industry can get into the environment and the movement of the exchange of matter (water, vegetable, etc.) can reach the human body.

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