

THE CHARACTERISTIC OF SULFURCONSISTING WASTE OF OIL AND GAS BRANCH

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The oil-extracting, transporting and recycling industries are the most ecologically hazardous branches of a national economy. The enterprises carry out the activity at high pressures and temperatures with high-toxic, fire and explosive substances and they are accordingly, sources raised technological and ecological risk.

Environmental pollution at oil recovery begins with processes of drilling of chinks and their preparation for exploitation. Drilling of chinks is accompanied by disperse destruction of breeds, formation chisel waste, removal by its flushing liquid. The basic waste formed at drilling of chinks is chisel sewage: the fulfilled chisel solution, chisel waste, ground, metal scrap, the hard human refuse, the used butts, container, etc.

THE WASTE, FORMED from a CHINK

The name of a waste	Quantity	Way of recycling
Chisel waste	46 m ³	Warehousing in waste
The fulfilled chisel solutions	5 m ³	Warehousing in waste reuse
Chisel sewage	10 m ³	Reuse
Ground	0,7 tons	Warehousing upon termination of works
The used container	5,3 tons	Burning in the rubbish-burning furnace
The used butts, canisters	20 numbers	Reuse, or sending

Chisel sewage is the multicomponent suspensions containing to 80 % small admixtures, serves for maintenance of high aggregate stability. Pollutants in them are subdivided into the weighed, soluble organic admixtures and oil products. These waters are stored in capacity, settle and used repeatedly.

The fulfilled chisel solution is formed at chink building. Ability polluting it judge under the maintenance in them of oil and the organic admixtures estimated on indicator XPK, pH and mineralizations.

Chisel waste - the breed separated from a chisel flushing liquid by the clearing equipment, is formed at carrying out operations when the flushing liquid follows from lifted over a trunk of a rotor of a candle, at washing of circulating system, a working platform at a rotor, a boring column, pipelines. In the course of chisel works it is formed to 2 m³ hard fragments of breeds on metre of the drilled length. It on a mineral compound is nontoxic, but based on medium of a chisel solution, a particle it is adsorbed on the surface by toxic substances-hydrocarbons, various additives (to 15 %) and render damage effect on a vegetation mantle, etc. biotas. As have shown researches of many scientists in toxic chisel waste except hydrocarbons contain HAVING fallen, hydroxide calcium, a carbonate of sodium, acid, to 7,5 % of oil and to 37 % hardened. In chisel waste separate a liquid phase and after corresponding processing use repeatedly, and the hard phase is used now in many deposits for building of intratrade roads, preliminary mixes up with a ground. This waste concerns to IY to a hazard class.

Ground (the soil polluted by oil products) is formed at work of the chisel equipment, motor transport, at наливе and plum of combustive-lubricating materials in capacity etc. a hazard Class a ground III.

Salty water and a water oil emulsion possess the greatest migratory ability in chisel solutions. In territory of deposits of soil, surface and ground waters foul oil products and oil-field sewage, as a result of it in soils balance, fermentation activity, a compound and forms of elements changes some conditions.

The basic influence on is soil-vegetation mantle in case of flood of oil and oil products is reduced to decrease in biological efficiency of soil and vegetation mantle biomasses. At flood of oil in number of 12 l/m^3 the biomass of a land part of plants in 3 years decreases for 74 %, and at flood of 25 l/m^3 – on 90 % for one year. The period of self-regeneration of a vegetation mantle for northern conditions makes from 10 till 15 years, for southern it is much less.

At exploitation of deposits the greatest hazard to objects of environment is introduced by atmospheric emissions of hydrocarbons and waste interception of sewage. In torches it is annually burnt about 7 billion m^3 oil gas that makes no more than 20 % from all taken volume. Taking into account oil gases at extraction it is lost about 3,5 % of crude oil. Now it is utilised no more than 70 % of passing oil gases, and other part is burnt in torches. Oil passing gas is introduced basically by methane, nitrogen, oxygen and carbonic gas. At OS burning also fouls heat that promotes greenhouse effect occurrence in a ground layer of an atmospheric envelope.

At development of the Caspian deposits the basic part of pollutants arrives in water, in territory of industrial objects from following basic knots of the trade equipment:

- Mouth of a chink and sites where oil flood often occurs because of tightness breaking armatures, and also at carrying out of repair work;
- Merniks and tracks of group and individual modular installations where leakage and oil floods are possible at overflow merniks, in processes of their clearing of a dirt and paraffin;
- Modular local and trade parks where oil flood often occurs at draining off of sewage from tanks, oil modulations at the top tanks.

Problem of pollution by oil products very important on Northern Caspian sea as in its water area because of imperfection of systems and the equipment of an oil-extracting complex, and also increase in volumes of transportations tankers of crude oil and oil products observe a regular agglomeration of huge mass of oil-spots. An oil significant amount gets to the sea at failure of courts, especially bulk-oil. The basic objects of petrocrafts and oil refinings on which sewage is formed, are installations of complex preparation of oil and the various installations of primary and deep oil refining realising processes salt less, demolitions, stabilisation, dehydration, rectification, coking, etc., and also oil keeping parks.

The Kazakhstan oil is very rich of sulfur consisting connections in this case ecosystems of Caspian sea is polluted hydrogen sulphide. The greatest hazard in a zone of the Caspian shelf polluted flows and sulfur drying the gases, containing amines introduce strongly, hydrosulphuric acid and other substances.

On oil-extracting objects, in particular, on the Tengiz deposit a drilling waste is neutralised by a biological method. Biological processing is connected with ability of microorganisms biochemical reaction to decompose a waste to harmless products, such, as dioxide carbon, water and cell material. To the most important factors causing biochemical moulding of hydrocarbons of quantity of microorganisms, oxygen for the cellular metabolism, the balanced quantity of nutrients and microelements for an optimum bacterial metabolism, the humidity, the corresponding temperature, pH and optimum concentration of salts. Except the above-stated factors course of process of biochemical moulding in many respects depends and on the maintenance of decomposed connections.

The technology of bioprocessing is widely applied in prospecting oil and gas branches and includes enrichment with compost and ground processing (distribution methods by the ground and a method of the ploughing the land). The Primary goal of these methods is decrease in the general concentration of hydrocarbons to such level at which they cease to be hazardous to environment.

The enrichment with compost method represents process of high-temperature aerobic moulding in which course a waste mixes up with loosening materials, are formed in heaps or are

shaky, and then are aerated by means of special devices or turn over. At ground processing a drilling waste extends a thin layer on specially allocated platform and is ploughed in land.

Environment substantially fouls at the oil transportation, especially certain ecological hazard is introduced by oil transportation on the sea. It can be connected with rupture of pipelines and with emergency floods. Corrosion of metals, factory marriage, defects of civil and erection works, mechanical damages etc. Number of failures on oil pipelines of Kazakhstan in a year approximately 500-700 events, thus oil losses make to 1,5 million tons

Gaseous emissions adversely influence ecological conditions in the locations of the industrial enterprises, and also worsen sanitary-and-hygienic working conditions.

In the course of clearing of crude oil and gas of hydrogen sulfide make from it an accompanying product – elementary sulfur (S) which also is a valuable raw product, best-selling in the world market. In the USA it is annually consumed more than 12 million tons sulfurs by manufacture more than 30 thousand names of production containing sulfur.

THE CHARACTERISTIC of the BASIC SUBSTANCES ALLOCATED in ATMOSPHERE, at EXTRACTION and OIL REFINING and GAS

Substance (Gas, steam)	Sanitary concentration, mg/m ³		
	The lethal	Maximum concentration limit in atmosphere	
		Working zone (hazard class)	Human settlements
Methane	235000	300 (4)	200
Etan	125000	300 (4)	200
The prosir	86000	300 (4)	200
Butane	62000	100 (4)	200
Gas condensate	50000	300 (4)	5
NO2			
CO	1200	5 (2)	0,005
CO2	12500	20 (4)	3
SO2	410000	78500 (4)	9800
CH3OH	1460	10 (3)	0,05
H2S	6000	5 (3)	1
NH3	4620	10 (2)	0,008
Soot	700	20 (4)	0,2
SO3	5000	4 (4)	0,15
	20	1 (2)	-

Gas production and sulfuric waste on quality meet world requirements. In 2006 Tengizchevroil realised 918 thousand tons of sulphur. At the moment about 75 % from total amount developed Tengizchevroil sulfurs it is realised in the markets, thus the next years the sulphur sales volume is planned to increase. Not less important problem also is clearing of gases of sulphur dioxide. The total of sulphur which is thrown out in our country in atmosphere, only in the form of sulphurus gas, makes about 16 million tons in a year, i.e. it is possible was from this quantity of sulphur to make to 40 million tons of sulfuric acid.