Available online at www.scholarsresearchlibrary.com

Scholars Research Library

Scholars Research Library

Annals of Biological Research, 2012, 3 (11):5379-5389
(http://scholarsresearchlibrary.com/archive.html)

Annals of Biological Research
Scholars Research Library
ISSN 0976-1233
CODEN (USA): ABRNBW

A comprehensive plan presentation on the generating wastes management in ahvaz oil production and desalinization plants, on the RCRA Basis

Azam Namdari[1], Zabih Mazarei[2], Taher Tahernejad[3]

[1]*Department of Environmental Science, Science and Research Branch, Islamic Azad University, Tehran, Iran.*
[2]*Commercial Management Branch, Sciences and Research University, Ilam, Iran.*
[3]*ISTRICT, Education Center, Ahvaz, Iran.*

ABSTRACT

This study focuses on the identification, classification and encoding of hazardous generating wastes in the greatest Middle East oil unit- National Iranian South Oil Company (NISOC)-, for a comprehensive management of the hazardous and non-hazardous wastes in one the Karun Oil and Gas production plants in Ahvaz, on RCRA basis. The results of this first-time-ever-accomplished research in Iran which were derived from 154-test questionnaire analysis, manual and AutoCAD drawings of units and standardized experiments, show that, there are identified chemicals in wastes; after being compared with 8 lists of hazardous materials, international standard and the number of materials found in the checklist. In general, 33 sorts of poisonous hazardous wastes, 5 sorts of non-hazardous materials and 25 sorts of the naturally unknown as hazardous wastes were detected in which, 3 sorts of them laid in acute hazardous wastes checklist, 4 in poisonous hazardous wastes, again 4 in hazardous wastes derived from specific resources, preferred toxic hazardous wastes, 6 in the United States Environmental Protection Agency checklist and 10 in toxic materials according to TCLP and EP test. 6 toxic groups contain heavy metals such as: Nickel, Lead, Zinc, Copper, Chromium and Cadmium. The centrifugation; as a conclusion, is the best possible economical method to treat the waste waters, and bioremediation; is the best possible economical method to treat the polluted soils thorough hazardous materials.

Key words: Oil industry, Resource conservation and recovery act, Hazardous waste, Desalinization and Production

---

INTRODUCTION

Khuzestan state is of highly importance in oil and gas fields, due to its geological and paleontological characteristics that entitled according to its geological stratum. Ahvaz on fields contains 2 Asmari and Bangestan reservoirs, and oil production and desalinization processes carried out in Karun and Marun plants in Ahvaz. No.02 the Karun and Marun fields, in general, involve 4 and 6 plant complexes respectively in which any complex contains production, desalinization and NGL units. The Karun oil production and desalinization plant is to be studied in this research project that located in northeast of Ahvaz, 6 Kilometers to Ahvaz - Bandar Imam road way, constituted and commissioned in sep. 1963. The area is on a 17 meters elevation. The total number of recently oil-Producing wells is 110. This plant complex were severely bombard for 3 times during the Iraq-Iran compulsory war, since this area involves the largest oil unit in Middle East. The villagers' residential proximity to the plants created a problematic situation. Also, the staff's permanent exposure to the steams, wastes and chemicals will be hazardous to their health, and cause the exposing trees to be seared after a short period of time. A number of birds of passage will be entangled in these pollutants and died away, since this area leads to the Shadegan International wetland; where they migrate during their migration period [11]. Iran's economic reliance on oil income caused the

activity of the oil companies to be increased day by day, which subsequently results in wastes accumulation. Petroleum contains variety of impurities, that are to be eliminated or reduced when chemicals applied, hence some of them might be hazardous. At production and desalinization processes, liquid, solid and semi- solid wastes will be generated and discharged in environment. Chemicals had played a critical role in controlling of excavation and production, production improvement and qualification, desalinization, oil and gas manufacturing system and pipes corrosion [13]. Especially in desalinating plant, in which a wide vast of the ground polluted by oil materials and wastes, saline materials generated from extracted salty water along with the petroleum and oil sludge in the plant, additive chemicals to the oil, in different stages, such as; oxygen scavenger, Demulsifier, corrosion inhibitor, bactericide, etc., discharged wastes passed into desalinization and production pit and pounds, that will be hazardous in case of evaporation or ground absorption. Although, the probability of waste water transmission into the ground waters is nil, due to the natural insulation of soil tissues with superfine soil and regional topography elevation to the underground waters [2], the probability of hazardous waste water penetration into the ground water should be taken into account and tried to purify the waste water polluted soils and prevent the pollutants dischargement due to the high elevation of regional underground water, rifts and heterogeneities [11]. In order to reduce the pollutants, they tried to inject the desalinization plant waste water into deep and defunct oil wells, after a while, it cleared that, waste water injection of Bangestan oil into the well, due to its turbidity and bacteria arising, will make the porous of the reservoir rock be closed. that's why the Bangestan produced waste water will only be discharged into the evaporating pounds [11]. purification of the soil polluted with oil proven to be expensive, as studies showed [16]; That's why natural soil remediation methods mostly used in some countries such as Australia [9], Due to this optionality and low charge organic clay is used as absorber incase heavy metals such as; lead, zink, nickle, copper [10] [8]. Karun oil compounds adapts the results of this paper in different areas such as: the research done in south of the Tehran refinery in which Benzene, Toluene, Ethyl Benzen and zylene identified [5], In Anzali international wetland, some of this paper based on Aromatic also found among PAH compounds [18]. Among the heavy metals identified in 18 stations of Hydrocarbury pollutants studies on Persian Gulf beaches, in which Nickle stood in highest Level of concentration [17] Phenol and hydrocarbury aromatic Compositions found in hydrocarbury pollutants study on ground waters in Arak refinery[4]. Oil sludge placed in the hazardous wastes in Arak Shazand petrochemical company's oil [12]. In this project, all liquid and solid wastes whether conventional or unconventional will be identified, classified and managed according to the Resource Conservation and Recovery Act [11].

MATERIALS AND METHODS

Table no. 1. shows the most important materials and methods that used in this research [1] & [11].

RESULTS AND DISCUSSION

Technical Features of the plants

The oil production capacity of this complex is, 21000 Asmari barrels, 63000 Bangestan's and 70000 Masjid Soleiman, and affiliated areas a day. 18250000 Asmari barrels and 16060000 Bangestan's in desalinization plant, and 173375000 of both are produced in production plant .Aforesaid oil is passed to the production plant at first and Asmari and Bangestan oil H2S-free petroleum and saline petroleum will be transferred into the oil kipping tanks and desalinization plants to be desalinized. Respectively after oil and gas separation in some tripartite separative vessels, so called bank. Asmari and Bangestan oil will, after desalinization process separately be backed to the production plant and jointed to the same H2S-free petroleum to be used at home or abroad. Demulsifier, corrosion inhibitor, bactericide and oxygen scavenger chemicals will be injected in to 12 point during the process. There are a yearly consumption of 1260 Demulsifier barrels equals to 264600 liters and 2190 barrels equals to 480000 liters, in production plant(table 2.), and desalinization plant, respectively(table 3.& 4.) [11] [6]

Table 1. Experimental, Materials and Methods

	Methods	Functional Quality During The Project
1	Library – based studies	- Main courses, home and abroad papers, thesis, quarter lines, journals, magazines, experiments description, standard books set on ASTM laboratories methods, instructional books of national south oil - rich areas company, reports, national academies Archive and Library, Foreign books/ Sources from 2002 on, related to 19 research centers - websites : ASTM, ELSEVIER, CONCAVE, RCRA ,etc.
2	The scope of studies	- Geographical Situations Investigation such as; natural, environmental, demographics waters, topographical and birds immigration . - Monitoring on top of the highest Tank with the height of 17 meters, to observe the polluted area and pounds. - to identify the pollutant potential and level produced by plants. - Identification of wastes discharging places in environmental and determining the influential areas as scopes of studies.
3	Field Studies	Visitation of 2 target factories for 30 times and taking some photo and film, Interview and questions, questionnaire with 154 questions, manual measurement of the pounds, pits and polluted soils, calculation the volume of the produced sludge through sludge height and tanks capacity taking some photo and film of polluted areas. Manual expansive of the plants.
4	Sampling and experiments methods	- Determining of 4 characteristics of the materials, such as; flammability, reactivity, corrosivity and toxicity. - Measurement the 4 materials' LEL injected into the processes through PMCCT system and ASTM standard section D-93-80. - Measurement the pH of 4 injected materials' Ph into the plant via digital pH measurement system - Using the Material Safety Data Sheet, related to materials being used to find the material chemistry formula - Implementation of the Experiments results, done by me for the NISOC in order for them to take the ISO 14001 that contains weight /percent of oil, phenol and heavy metals such as: Na, Cr, Fe, Zn, Pb, and Ni, pH and EC.
5	Data Analysis	- Interpretation of general and specific questionnaires. - Interpretation of the plants of production and desalinization plants. - Seeking the available chemicals in wastes through 8 international standard indices. - RCRA (F, K, P and U) toxicity, EP toxicity, TCLP of toxics ,preferred toxic material EPA and wastes' encoding and managing methods are determined - Results comparison, and analysis.

Table 2. Specifications of the Chemicals Used and Injection Points on the Karun Production and Desalinization Plants

Chemical Material Name	Base/ Compound	points of Injection	Ph	Flash Point .c	plant
Demulsifier PNX - 2380 Berk - 5667	Compounds of Ethilen Oxide Co –Polimers	1 - The Common header pipes, 2 - the operations plant manifold, 3 – the inlet to electric desalter, 4 - the inflowing petroleum into the bangestan desalinization plant, 5 - the inflowing petroleum into the asmarian plant, 6 - the asmarian desalter, 7 – the outlet from the surge tank	- -	 44.44 26.66	 Production Desalinization
Oxygen Scavenger Ti-109	Amunium Sulfit	1 - The outflow from the De-Oxygenating tower in the water treatment plant, 2 - the inflow into the plant 100 m from the fresh water source, 3 - the water injected into the pits 4 - the desalinization water system	4.5	100>	Desalinization
Corrosion Inhibitor PL-464	Ethilen De - Amin	1 - The inflow and outflow into the cleansing tank, 2 – the inflow and outflow from the surge tank, 3 – the inlet to the extra water abstractor pumps	6.1	65>	Desalinization
Bactericide PL-234 Energy – 265	4 Aldehid Type with the Amin Base (Usually of the Liquid Cationic Surface Type Which is active in water)	1 - The inflow and outflow into the cleansing tank, 2 - the inflow and outflow of surge tank, in the form of a shock to the continuity of the process using a gravity drainage sump (on a monthly basis)	2.8 7-8	- -	Desalinization

[11], [2], [13], [15]

Table 3. The waste from the Karun production plant in winter 2005

Wastes type	Drain period	Drain amount in per period	Drain place
Runoff canal sediments	Once annually	1 pick-upload	Disposed around the plant and buried 90 to 120 cm under the topsoil between pits 29 and 189 (land fill)
Tank sediments	Once every 3 years	3 pick-upload	"
Fuel pit sediments	Once annually	3 pick-upload	"
Oil Water Separator pit waste water sediments	Once annually	3 pick-upload	"
Oil Water Separator pound sediments	Once annually	3 pick-upload	"
Emulsifier Empty Barrel	Once annually	720 barrels 210 liters of Asmarian 540 barrels 210 liters of Bangestan	Debris Depot
Office wastes - house quasi wastes	Twice a week	1 pick-upload	Disposed around the plant and buried 90 to 120 cm under the topsoil between pits 29 and 189
Branch and leaf of trees	Don't stable	Pick-upload	Outside the plant
Oil Water Separator pound sediments	Once every 3 years	3 pick-upload	Outside the plant

Table 4. The wastes from the Karun. Desalinization plant in winter 2005

Wastes type	Drain period	Drain amount	Drain place
Runoff canal sediments	One per in month	pick-upload	Disposed around the plant and buried 90 to 120 cm under the topsoil (land fill)
Tank sediments	4 times a year	Truck	"
Oil Water Separator pound sediments	4 year 1 time	pick-upload	"
Evaporation pound sediments	Remains in place	Remains in place	Remains in place
Safety valve's pound sediments	"	"	"
Oil Water Separator pound sediments	"	"	"
Sand Drain pit sediments	"	"	"
Decayed chemical material	"	"	Till now has been very little and taken to specific areas
Petroleum in safety valve pound	"	"	Returned into plant via septic tank
Rubbish	2 days 1 time	90kg by pick-upload	Disposed around the plant and buried 90 to 120 cm under the topsoil between pits 29 and 189(land fill)
Repairs waste of electrical (burned lamps, paste, wire, etc)	Don't stable	Don't stable	Taken to rubbish pit
Repaired wastes	"	Changeable	Debris Depot
Bottle of chemical material	Daily	4 Asmary barrel 2 Bangestan barrel	Debris Depot
Metal wastes	1 or 2 per in year	200kg per month	Debris Depot
Brunch and leaf of trees	Changeable	changeable	Oute side the unit

Most of the producing wastes will be discharged into the pounds. Pits and pounds positions to the plants shown in(Fig. 1. & 2.) [11].

Fig.1. The Location of the Pits and Pounds in the Desalination Plant

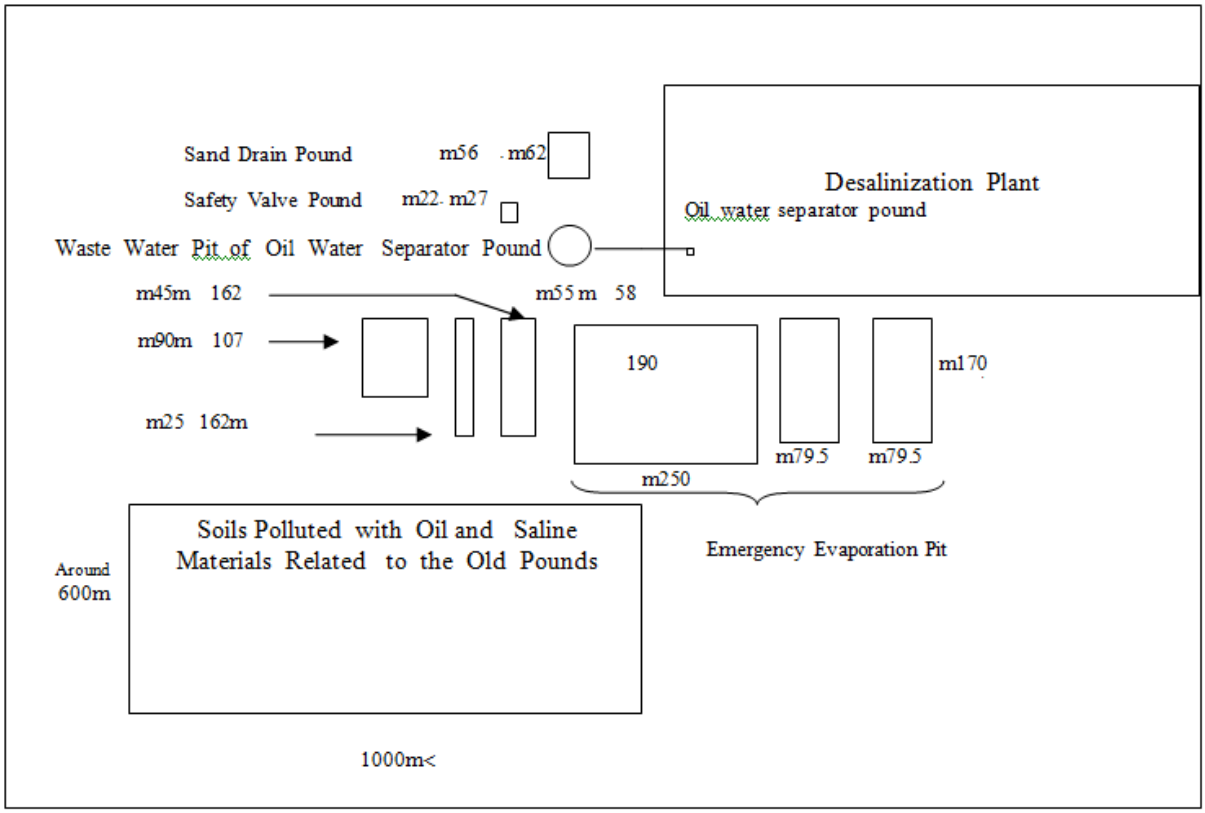

Fig.2. location of Pits and Pounds in Production Plant

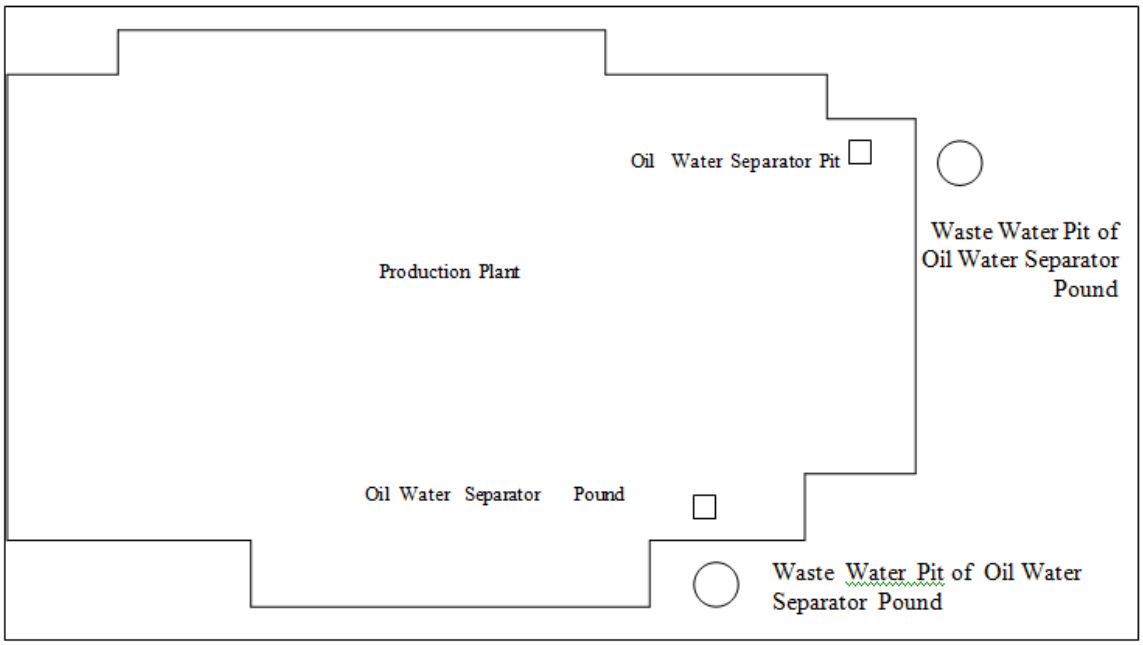

Fig.3. Waste Water Pit of Oil - Water Separator Pound Offsite The Desalinization Plant

Fig.4. Safty Valve Pound Offsite The Desalinization Plant

Fig.5. Waste Water Evaporation Pounds Offsite the Desalinization Plant

In production plant, Demulsifier, corrosion inhibitor, chemical and oil will be ischarged in to 5 places as; oil water separator pound and its related waste water pit, surface water collecting channel, fuel pit(Fig. 6.) and offshore soil. In desalinization plant, corrosion inhibitor, bactericide, oxygen scavenger, Demulsifier and oil

will be scharged in to 7 parts and pits as, oil water separator and its waste water pit(Fig. 3.) surface water collecting channel, evaporation pounds(Fig. 5.), safety valve pit(Fig. 5.), sand drain pit and surface and offshore. In production plant, floating oil and grease on pits and pounds will be backed to Bangestan saline tank through plumage in linization plant, Bangestan's waste water will temporally be discharged into the pits for its 2S(Fig. 5.), but Asmari's will be injected in to the deep well. In some cases, Asmari's waste water in spite of the injective well existence will be discharged in to the temporarily evaporation pounds [11]**.**

Fig.6. Fuel Pits Offsite the Production Plant

Table 5. The wastes and identified materials in the Karun production and desalinization plants

	Name	Base of material	
1	emulsifier	Ethilen oxide copolymer, $HO(CH_2H_2O)P$ ‘$(CH_3CHCH_2O)q$ ‘ $(CH_2CH_2O)PH$	
2	Oxygen Scavenger	Ammonium sulfite, (NH_4SO_3H)	
3	Corrosion inhibitor	Ethylene de-Amin	
4	Bactericide	Aldehid	
5	Acids found in petroleum	Crisilic acid	Crysolse, Zylons, Phenol, Mercaptan
		Carboxylic acid	
6	Petroleum chemical compounds	Paraphin	Isobutene, Buten
		Alphin	Isobothilen, Bothilen, De olphin, Asetilen, Botadyen
		Naphtenic hydrocarbons	Deca Hydronaphtalin, De Phenil Cyclo Hexan, Cyclo Pantan, Cyclo Botan, Cyclo Propan, Decalin
		Aromatic hydrocarbon	Banzen, Zylon, Naphtalin
		Sulfurs	Aliphatic Sulfurs, Mercaptan, H_2S, Tyophen
		Oxygenators	Naftenic Acid, Syclo Pantan, Aromatic, Azot, Sulfure, Furan, Phenol
		Metal derivatives	Fe, Al, Si, Ca, Mg, Ni, Va, Na
		Nitric compounds	NO, NO_2
7	Oil and petroleum slurry	Sediment sludge in the butan tanks, Sediment sludge of Oil Water Separator, API Sludge, Oily Soils, Sludge of Canals, Sludge of Safety Valve and Sand Drain	
8	Empty barrels and receptacles for chemical compounds		
9	Maintenance and service wastes	Electrical and Mechanical Compounds	
10	Psydo-urban wastes	Food remains of staff canteen	
11	Office wastes	Paper and cardboards	
12	Tree Branches, leaves, etc.		
13	Soils saturated with oil and saline compounds	Sediments at bottom of pits	Sand Drain, Oil Water Separator, Evaporation, Safety Valve
		Polluted Soils	The leakage of chemicals throughout the plants, chemical storage areas, areas where chemicals are injected, remains of old pits and outside the plant
14	Sewage from plant		
15	Corrupt chemicals		
16	Building debris and sweepings		
17	Clogged filters		
18	Saturated rages used for maintenance		

[11] , [2], [13], [15]

Wastes Identification

12 and 22 places identified in production and desalinization plants, respectively. Existent wastes and chemicals identified, when the waste production places in to both plants clarified(tables 2., 3. & 4.). Identified wastes' kinds, quantity, alternates and discharge places presented in (tables 3., 4.). We referred

to oil composition of this area to exactly clarify and assign the wastes compositions that led us to the fact that, wherever soil polluted with petroleum, it will un doubtfully be polluted with oil compositions(table 5.).So, the base of all benefiting chemicals in this industry determined through the material safety data sheet or standard tests related to the RCRA, that results in the identification of existence chemicals in wastes(tables 2. & 5.). The volume of generating sludge in desalinization plant, and the area of polluted soils, measured as 176572 m^2 and 7036115 m^2 [11].

Table 6. List of Hazardous wastes in 4 lists categorization system of F , K , P , U for wastes found at the Karun Production and desalinization plants

	Material Name	Number of chemical	Number of the waste	Characteristics type	Plants
1	Ethylene Oxide Co-Polymer	75-21-8	u-115	T,I	Production and Desalinization
2	Cyclo Hexane	110-82-7	u-56	I	“
3	1,3 Cyclo Pantadien , Cyclo pentane	77-74-4	u-130	-	“
4	Tuphenols	108-98-5	P-14	-	“
5	NO NO_2	10102-43-9 10102-44	P-76 P-78	- -	“ “
6	Creosols	131977-3	u-52	-	“
7	The materials floating in the Oil Water Separator pools	-	K-48	T	“
8	The solid emulsion oil	-	K-49	T	“
9	Sludge of heat exchange tubes pipe	-	K-56	T	Desalinization
10	The slurry from API separator	-	K-51	T	Production - desalinization
11	Empty chemical reception	They are Classified based on their contents T,I			

[11] , [2], [15], [3]

F: Wastes From non Specific Resources in RCRA.
K:Wastes From Specific Resource in RCRA.
P: Acute Hazardous Wastes in RCRA.
U:Toxic Hazardous Wastes in RCRA.
I: Flammable in RCRA.
T:Toxicity in RCRA.

Table 7. list of categorized hazardous wastes based on the characteristics of both the production and desalinization plants

number	Materials Name	EPA Hazard Code	Toxicity
1	Demulsifier	-	☑
2	Benzene	D019	☑
3	Naphthalene	D012	☑
4	Phenol	D043	☑
5	Cd	D006	☑
6	Pb	D008	☑
7	Cr	D007	☑
8	Orto Cresol	D026	☑
9	Meta Cresol	D027	☑
10	Para Cresol	D028	☑
11	Iso Butanol	D038	☑
12	Empty barrel	-	☑
13	Furan	110-00-9	☑
14	Ethilen deamin	107-15-3	☑
15	H2S	7783-6-4	☑
16	Mercaptans	74-93-1	☑
17	propilen oxid	75-56-9	☑
18	Ni	-	☑
19	Zn	-	☑
20	Cu	-	

[11], [14]

Hazardous wastes identification and classification

The identified wastes were compared and encoded according to their exploitation with 8 indexes such as: toxic and hazardous wastes, acute hazardous wastes, Zardous wastes, hazardous wastes from specific resources, hazardous wastes from non specific resources, preferred toxic materials, EPA and index of toxic materials [11] .Other tests such as: material radioactivity, corruptively, herb poisonous and trampolines effects are running and have not be included in RCRA(table 1.) [6]. Any unknown materials were identified through the RCRA standard tests clarified 4 features of the material such as; toxicity, reactivity, corrosively and flammability if hazardous, classified as hazardous, and vice versa A number of probable hazardous materials, placed in a separate classification named wastes with unknown hazardous features,

These hazard classification and encoding, were identification wastes management, guidelines(tables 6. & 7.) [11].

Waste Management

In this study, all soil cleaning up methods used for polluted soils management investigated; and the best and most economical ones announced(table 8.) [11]. Recently wastes management data of this plant, mentioned in table nos.02 and 03. American Environmental Protection Agency have offered a hierarchy in order for the preferred wastes management to be followed as; waste reduction, waste separation, waste conversion, energy or material Recovery, burning or purification, and safety land fill, respectively [7]. Moreover, different methods for hazardous wastes elimination on RCRA basis divided as; sanitary burial, burying in surface containers, injection into the deep wells, elimination through the wastes admixture with soil, elimination in mines and salt domes and scattering on the ground[11].

CONCLUSION

Investigations showed that; desalinization plant is more considerable than production plant in discharged chemicals barrels numbers, the quantity of consumed chemicals either in number or in amount, polluted soils area, producing sludge and the pounds extent; and desalinization processes will leave more environmental pollutions to the production processes. The most important and the most-producing waste identified in both plants is Demulsifier. Experiments and oil weight percentage in the wastes produced in both production and desalinization plants, resulted in the fact that, if oil existed in wastes, all available oil wastes ether hazardous or non-hazardous, would be existed(table no. 5.). Although, the oil compounds is different in any area, it contains hydrocarbons, aromatics, cyclo paraffins, naftens, heavy metals, sulfur and nitrogene(table 2. & 5.). Hexa-capacity chrome is more toxic than tri-capacity one and causes Bronchus cancer. Heavy metals toxicity will decrease the Blood Glucose, if the capacity of trioxide chromium increases. Whereas the temperature incensement causes the metallic toxicity to be increased in crops, the existence of heavy metals in wasted should be mostly be considered, underground resources threat, is still the most critical issue in toxicity. Although, non-hazardous materials also existed in both plants' wastes, they will be classified in hazardous wastes wherever they are admixed with the hazardous wastes. Comparison of heavy metals level in clean soil and polluted soil with oil products resulted in the fact that the wastes discharging in the environment will cause all heavy metals be increased in soil. Studies showed that, the wastes produced in these plants, will be classified as hazardous, non-hazardous and unknown-hazardous materials. In general, 33 varieties of hazardous, 5 entirely non-hazardous and 4 unknown-hazardous materials identified as followed:

Known-hazardous materials

Identified hazardous wastes are classified in acute hazardous wastes index such as; TyoPhenols and nitrogenized composions in oil composition(table 6. & 7.) Toxic wastes index contains Ethylene Oxid Co-Polimers, Cyclo Hexan, Cyclo Pantan and Ceresols of Crisilic Acids that existed in oil(table 6. & 7.).Hazardous wastes from specific resources index will contain the sludge produced in oil-water separator pit, sludge remained after essential amendment of exchanger lines, emulsion solids, residual oil, floating oils on the surface of pounds and pits (table 5.). Known toxic and flammable materials mentioned in table nos. 6 and 7.

Non-hazardous materials

That classified in 5 groups are as followed; quasi home-made wastes, Office-made wastes, plants' wastes such as; branches and leaves, building wastes and the debris's that are not saturated with petroleum and oil, and wastes remained after mechanical and electrical reparations.

Wastes with unknown-hazardous features

That contain; Ammonium Sulfite, Ammonium be Sulfite, Zylons, Naphtenics, Phenolics, Palmetics, Estearics, De-olphins, Mg, Aliphatic Sulfures, Amine 4 type, Deca Hydro naphtalin, De phenil, cyclo Butan, Decaline, Fe, Al, Ca, Va, Na, Si, Asetilens, Iso Buten and Bothilen.

Table 8. Proposed Hazardous Waste Management Method

	Waste List	Reduction Methods	Accumulation and Temporary Keeping Methods	Transference Methods	Reject on / Burial Methods	Remediation Method	Recovery Method
1	-Demolsifier -Oxygen Scavenger -Corrosion Inhibitor -Bactericide	- Least Amount to Be Used - Best Proper Ones to Be Used - Materials Ratio to Be Observed	Through the Lines and be Injected into the Polluted Oil Tank	Through the Line	-Asmari's Waste Water to be Injected to the Well - Bangestani's Waste Water to be Discharged into the Pit	Soil Bio Remediation	-
2	Heavy Metals	Facilities Reformation to Prevent the Petroleum and its Components Seals	Through the Lines and be Injected into the Polluted Oil Tank	Through the Line	-Asmari's Waste Water to be Injected to the Well - Bangestani's Oil Waste Water to be Discharged into the Pit	Organic Clay - Soil Bio Remediation	Sedimentation
3	Petroleum & Its Compounds	Facilities Reformation to Prevent the Petroleum and its Products Seals - Otherwise; It Will Be Unavoidable	-Asmari's Oil Wastes to be Injected into the Polluted Oil Tank and Bangestani's Waste to be Discharged into the Evaporating pounds	Disfunctioned Parts to be Transported in a Tank after Being Encoded	-Asmari's Oil Waste Water to be Injected to the Deep Well Bangestani's Waste Water to be Discharged into the Evaporating Pit	Oil Separation from the Waste Water	Centrifugation and Anaerobe Assimilation
4	Oil Varieties	- Least Amount to Be Used - Best Proper Ones to Be Used - Materials Ratio to Be Observed	Flotation Through Heat and Aeration and Accumulation in Special Container Oil Sweeping and to be Kept in Special Hazardous Wastes Barrels	to be Transported in a Tank after Being Incoded	Buren in to the Hazardous Wastes Land Fill	Centrifugation	- Ultra iltration - Flotation -Boiling in Industrial Boiler and Heater
5	Oil Sludge	Best Proper Type of Bactericide to be Used	Sweeping and to be kept in proper barrels for hazardous waste	Removed in to the barrels and to be Encoded With T and I Letters and Transported	Hazardous Wastes Land Filling	Centrifugation	Centrifugation Anaerobe Assimilation Surface Absorption through Active Carbon
6	Chemicals Empty Barrels	Chemicals Empty Barrels	Proper barrels to be contractually colored and encoded	-	The Barrels to be Melted after Expiration	-	To be Melted and be Used as Initial Input
7	Cleaning napkins and other petroleum-polluted materials	High absorptional cleaning napkins to be used for several times	To be handled and kept in proper hazardous waste barrels by trained personnel with proper P.P.E.	-	Hazardous wastes Land Filling	-	-

In comparison with the agriculture soil criterion, the available heavy metals in these plants such as; Cr, Pb, Cd and Zn were higher than environmental criterion and also, their phenol, Oil and Grease, and acidity measured higher than the standard discharging in water and soil. Chemical material features analysis shows that although some of them are under the standards level, their accumulation influence, consistency of pounds location, day by day incensement of the chemicals will cause their concentration gradually raises upper than standards levels. In production plant; 12 vans of hazardous sludge and 96 vans of non-hazardous wastes will yearly be generated in production plant. The volume of generating sludge such as: the sludge produced on bottom of all banks and in the oil-water separator pounds, is 176572 m^3 in desalinization plant, during 4 years, that is classified in wastes from specific resources index. An amount of 3936000 kg of non-hazardous wastes are generated in this plant. In production plant, the demulsifiers

will be penetrated into the Asmari and Bangaetan oil-water separator pounds, surface waters accumulator channels and fuel pits and will transform a soil area about 3370 m^2 to the hazardous wastes. In desalinization plant; some areas such as: oil-water separator pounds, off shore pit for the oil-water separator pound, offshore emergency-evaporation pits, surface water accumulator channels, sand drain pit, safety valve pit and the old pounds vestiges were polluted with demolsifiers. The area of these soils are estimated 703600 m^2 that will be in hazardous wastes group, aside the depth of wastes penetration in soil. Anaerobe assimilation; is a suitable method to eliminate most of organic materials, such as; aromatics, Methane, Esters, Organic Acids, Alcohols, Halogens, and other complicated compounds. Suitable organic compounds to be absorbed through active carbon are as followed; Aromatic solvent, Cyclo Aromatic, phenol compounds, heavy Aliphatic Amins, Aromatic Amins, Fuels and Aromatic Acid(table 8.).

Acknowledgement
The authors would like to thank Mr. Eisa Namdari, Mrs. Akram Hasanian, Mmes. Asma Namdari, Atefeh Namdari, Fatemeh Namdari, Mansoor Namdari and Maryam Aramideh. The author would like to thank NISOC R&D four its Funds.

REFERENCES

[1] Annual book of ASTM standards, **1997.** D-93-80, 11.02 , USA.
[2] Habibnia, B. & Dinarvand, J. **1999.** Discharging of Petro – saline Waste waters upon the Productivity Units and Environmental Effects in Southern Oil – Rich Areas, Papers Collection of Third National Chemical Engineering Congress, Oil Industry University, Ahvaz Oil Engineering College, pp. 730 - 736.
[3] Asadi, M. & et al, **1993.** Hazardous Wastes Management, Environmental protection Agency, Environmental Protection Agency.
[4] Askarzadeh, H. **2003.** Torghabeh and et al, oil Pollutant Investigation in Underground Water of Arak Refinery. Ecology. Environment College. Tehran University. 32 47-56.
[5] Gitipour, S, **2005.** The Pollutions pertaining the Tehran Refinery Southern Soils due to the oil Combinations Leakage and et al, Ecology, Tehran University, 34 39 - 45.
[6] Hamadani, M, **2005**. *Iran Oil Society Journal*. 37. 3 - 28.
[7] Henry, J. & Runnals, O.J.C. **2005.** Hazardous wastes, in: O.K. Asthana, M. Asthana, (Eds.), environmental science and engineering, Hall of India private limited new Delhi, Eastern economy edition, pp.620 - 638.
[8] Koorgol R. & et al. *Annals of Biological Research,* **2011,** *Annals of Biological Research,* 2011, 2 (1):241-243.
[9] Mc Clure N.& et al. **2004.** Development of a centralized soil bioremediation facility in south Australia, Waste Management, Sciences Publishers Inc, USA.
[10] Moazed, H. & Virarachavan, T. **1999.** Removal of oil from water by bentonite organo – clay, hazardous and industrial wastes, industrial and hazardous waste conference, University of Connecticut.
[11] Namdari, A. **2005.** Identification and Classification of wastes in 2karun Oil production and desalinization plants in Ahvaz, M. Sc. Thesis. Islamic Azad University of Ahvaz Sciences and Research center, Iran , pp.1 - 200.
[12] Oil Industry Research Centre. **2000.** Oil and Biologic Sludge Land filling in Shazand Backwater Refinery Purging System in Arak. Tarkian, F. and et al: Tehran Oil Industry Research Centre. 65 – 68.
[13] Sinaei, P. & et al, **1994.**Technical Specifications of Consumable Chemicals Standards, Standards Engineering Office, Terrestrial Areas Production Management, Ahvaz.
[14] Singh, V.P. **2005.**Toxic metals and environmental issues, SARUP & SONS, new Delhi, pp. 1-14.
[15] Talachi, H. & Mahmoodi, S. **1992.** The Acids of the crude oil. *Iran Oil Society Journal*, 46-50.
[16] Tam, Y.L. & Signal, B. **2004.**Heavy metals availability at industrially contaminated soils in NSW, Australia, Waste Management, Sciences Publishers Inc, USA.
[17] Vosoughi, M.& et a l, **2004.** The Study of Hydro carbonates Pollution Level in Persian Gulf Beaches and Biologic Decomposition Probability, Water and Waste Water, Plan Counselor for Water and Waste Water Research Plan. 49 2-9.
[18] Yazdanparast, F. & et al, **2004.** Identification and determination of PAHs compounds in Anzali international wetland, International journal of environmental science and technology ,department of chemistry Islamic Azad University , north Tehran branch,Iran. 3 223- 227.