TÜPRAŞ İZMİT REFINERY PORT

DANGEROUS CARGO HANDLING GUIDE

Prepared on: 30.01.2018

(Please see Revision page for Revisions)

REVISION PAGE

Row No	Revision No	Revision Content	Revision Date	Revised by	
				Name & Surname	Signature
1	001	Revision according to the Instruction on Dangerous Cargo Handling Guide	28.11.2022		
2	002	Revision according to TYUB audit findings	23.05.2023		
3	003	Revision of responsibilities and organizational changes	20.05.2024		
4	004	Revision of responsibilities	09.09.2025		

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1. INTRODUCTION

1.1FACILITY INFORMATION FORM

1	Name/title of facility operator	Tüpraş İzmit Refinery Directorate		
2	Contact details (address, phone, fax, e-mail and website) of facility operator	Güney Mah. Petrol Cad. No: 25/1 41780 Körfez-Kocaeli Phone: 0262 216 30 30 Fax: 0 262 316 3724 arda.yildirim@tupras.com.tr		
3	Facility's Name	Tüpraş İzmit Refinery Port		
4	Facility located at	Kocaeli		
5	Contact details (address, phone, fax, e-mail and website) of facility	Güney Mah. Petrol Cad. No: 25/1 41780 Körfez-Kocaeli Phone: 0262 216 30 30 Fax: 0 262 316 3724 E-mail: info@tupras.com.tr KEP Adresi : izmit.tupras@hs02.kep.tr www.tupras.com.tr		
6	Geographical region of the facility	Marmara Region		
7	The Port, to which the facility reports, and contact details.	**KOCAELI REGION PORT OFFICE** Atalar Mah. Sahil Yolu Cad. No: 26 Yarımca- Körfez / KOCAELİ - TURKEY **Phone** : + 90 262 528 37 54 / 528 24 34 / 528 46 37 **Fax** : + 90 262 528 47 90 / 528 51 04		
8	The Municipality, to which the facility reports, and contact details.	Körfez District Municipality of Kocaeli Metropolitan Municipality Mimar Sinan Mahallesi, Eşref Bitlis Cd. No:369, 41780 Belen/Körfez/Kocaeli Phone: (0262) 528 2302 Fax No.: (0262) 528 5422		
9	Name of Free Zone or Organized Industrial Zone, at which the Facility is located	Within the borders of Körfez District Municipality of Kocaeli Metropolitan Municipality		
10	Expiration date of Shore Facility Operation Permit/Temporary Operation Permit Certificate	31.12.2025		
11	Operating status of the facility (x)	Own load and additional 3rd person (X)	Own load (….)	3. person (….)
12	Name & surname, contact details of person responsible for the facility (phone, fax, e-mail)	Arda Yıldırım Güney Mah. Petrol Cad. No: 25/1 41780 Körfez-Kocaeli Phone: 0 262 316 33 03 Fax: 0 262 316 3724 arda.yildirim@tupras.com.tr		

13	Name & surname, contact details of person responsible for hazardous substances operations of the facility (phone, fax, e-mail)	Tuğrul DERE Tüpraş İzmit Refinery Petroleum Movements Production Directorate 41780 Körfez / Kocaeli Phone: 0 262 316 3716 Fax: 0 262 316 3724 Tugrul.dere@tupras.com.tr
14	Name & surname, contact details of Hazardous Substance Safety Consultant of the facility (phone, fax, e-mail)	Mesut Metin Tuzla TMGDK Danışmanlık Denetim Gözetim A.Ş. Phone: 0 507 155 81 00 mesut.metin@tuzlatmgdk.com
15	Sea coordinates of the facility	
16	Types of Dangerous Cargo handled at the facility (Loads covered by MARPOL Annex-1, IMDG code, IBC code, IGC code, IMSBC code, Grain code, and TDC code and asphalt/bitumen and scrap loads)	**Piers:** Crude oil / - product-by-product - fuel / bulk liquid load / chemicals / LPG / mineral oil and base oil derivatives / bulk solid cargo
17	**Dangerous cargos handled at the facility (loads other than IMDG Code, among the cargo types in 16th article, will be written separately. Additional cargo request will be sent to the port authority with Annex-I form. It will be added to DCHG when appropriate)**	
18	**Classes for cargo handled, subject to IMDG Code**	**-**
19	**Groups for cargo handled, subject to IMSBC Code**	B
20	Types of ships that can berth to the facility	Tanker, Dry cargo, LPG, Chemical,
21	Distance of facility to the highway (kilometers)	2 km
22	Distance of facility to the railroad (kilometers) or railroad connection (Available/Not Available)	0 km Available
23	Distance of facility to the airport (kilometers)	45 km
24	Facility's handling capacity (Tons/Year; TEU/Year; Vehicle/Year)	
25	Whether scraps will be handled or not at the facility	Will not be handled
26	Is there any Border Crossing? (Yes/No)	No
27	Is there any Customs Bonded Area? (Yes/No)	Yes
28	Load handling equipment and capacities	Loading arms
29	Storage Tank capacity (m^3)	

30	Outdoor storage area (m^2)	
31	Semi-indoor storage area (m^2)	
32	Indoor storage area (m^2)	
33	Designated fumigation and/or defumigation area (m^2)	-
34	Name/title and contact details of Pilotage & Towage service provider	Towage service is provided by Ditaş under the permission of tow boat organization and pilotage service is provided by ANKAŞ **DİTAŞ Deniz işletmeciliği ve Tankerciliği A.Ş.:** Altunizade Mah. Kısıklı Cad. No:24 34662 Üsküdar / İSTANBUL Tel: (216) 554 62 00 Mail: info@ditasdeniz.com.tr **ANKAŞ Anadolu Kılavuzculuk A.Ş:** Mimar Sinan Mah. Denizciler Cad. No: 69 Körfez / KOCAELİ Tel : 0262 528 33 00 Mail: yarimcapilot@ankaspilot.com
35	Is a Safety Plan prepared? (Yes/No)	Yes

36	Capacity of Waste Receiving Facility (This section will be prepared separately, based on the wastes received by the facility)	Waste Type	Capacity (m3)
		Dirty Ballast, Slop, Sludge, Bilge water, Waste water, Garbage	

37 Specifications of dock/pier, etc.

Dock/Pier No	Length (meter)	Width (meter)	Maximum water depth (meter)	Minimum water depth (meter)	Tonnage and length of the largest ship that can berth (DWT or GRT-meter)
PHASE I PIER					
PHASE II PIER					
PLATFORM PIER					
PHASE III PIER					
DOCK					

1.2. Loading/discharging, handling and storage procedures for dangerous cargos handled and temporarily stored at the coastal facility

In our port facility;

• Within the scope of IBC code, Diesel, Petroleum, Jet A-1, Vacuum Residue, Fuel Oil, Naphtha, Isomerate, Platformate, HVGO, Hc-Dip, MTBE, Crude Oil

• Within the scope of the IGC code; LPG

• Within the scope of the IMSBC Code; Petroleum coke and Sulfur

handling activities are carried out.

"İZT.PÜM.PRO.2002 DENİZ DOLUM ÜNİTESİ NORMAL OPERASYON PROSEDÜRÜ" is used for the handling operations of dangerous goods at the port.

1. While receiving the shift, the shift book is read.
2. Information about the work in progress and the status of the shift is obtained from the personnel of the previous shift.
3. Operations and jobs completed in the previous shift are reviewed.
4. Operators control the field and equipment they are responsible for, fill in the relevant forms and report the current situation to the control operator and the chief operator.
5. The latest status of the vessels that continue to load and discharge and the reports received from the field operators about the status of the piers are reviewed.
6. The operation planning instructions are reviewed and the program of the works related to the unit is made.
7. The loading orders of the ships to be loaded are followed and the ships are called to the planned piers by radio according to the Planning instructions.
8. Information about the operations carried out on all ships that are loaded or discharged are recorded.
9. Pilot and tugboat information about vessels subject to tugboats are entered into the Pilotage Information System.
10. 1All operations related to ships such as loading, discharging, berthing, leaving, sampling and issuing cargo documents are followed in accordance with the "İZT.PÜM.TAL.2003 Deniz Dolum Ünitesi Operasyon Talimatı".
11. The arm assemble and arm disassemble operations for the ships at our piers are carried out in accordance with the "İZT.PÜM.TAL.2001 SVT Dolum kolları Kullanma Talimatı" and "İZT.PÜM.TAL.2013 Deniz Dolum Ünitesi EMCO Dolum Kollarının Devreye Alma ve Devreden Çıkarma Talimatı".

12. It is ensured that the operations and works specified in the unit are carried out within the information given to the shift chief operator.

13. At the end of the shift, the chief operator writes the work done in the shift book. The control operator and operators read and sign the shift book written by the head operator.

14. Incoming shift personnel are informed about the status of the shift and work.

15. The Marine Loading Unit Personnel must ensure that the area they are assigned to is periodically checked during all loading and unloading, including the cases where there is no ship operation.

2. RESPONSIBILITIES

2.1 General Responsibilities

The general responsibilities of all parties involved in the transportation of dangerous goods are outlined below:

a) They are obliged to take all necessary measures to ensure that the transportation is carried out safely, securely, and in an environmentally friendly manner, to prevent accidents, and to minimize damage in the event of an accident.

b) In case of emergencies such as fire, leakage, or spillage during the transportation of dangerous goods, they shall refer to the EmS Guide, which includes Emergency Response Procedures and Emergency Schedules for Ships Carrying Dangerous Goods.

c) To ensure appropriate medical first aid for individuals affected by the hazards of dangerous goods and for health issues arising from accidents involving such goods, they shall refer to the Medical First Aid Guide (MFAG) annexed to the IMDG Code.

2.2 Responsibilities of the Cargo Representative

The responsibilities of the consignor are as follows:

a) Prepares or arranges the preparation of the mandatory documents, information, and certificates related to dangerous goods and ensures that these documents accompany the cargo throughout the transportation process.

b) Ensures that dangerous goods are properly classified, packaged, marked, labeled, and placarded according to their type.

c) Ensures that dangerous goods are loaded, stowed, and secured safely and in accordance with regulations into approved packaging and cargo transport units.

2.3 Responsibilities of the Carrier

The responsibilities of the carrier are as follows:

a) Requests the mandatory documents, information, and certificates related to dangerous goods from the consignor and ensures that these documents accompany the cargo

throughout the transportation process.

b) Checks the compliance of dangerous goods classified, packaged, marked, labeled, and placarded by the consignor with the relevant regulations.

c) Verifies that dangerous goods are packaged in accordance with regulations using approved packaging and cargo transport units, and that they are safely loaded and secured.

2.4 Responsibilities of the Port Facility Management

The responsibilities of the port facility operator are as follows:

a) Does not allow ships carrying dangerous goods to berth at the facility without the permission of the port authority.

b) Provides written information to the ship regarding facility rules, cargo handling procedures, and relevant regulations.

c) Does not handle dangerous goods without obtaining handling permission from the authority and ensures that ships are not disadvantaged due to planning.

ç) Requests the mandatory documents, information, and certificates related to dangerous goods from the consignor and ensures that these accompany the cargo. If the consignor fails to provide these, the facility is not obliged to accept or handle the dangerous goods.

d) Shares all necessary data with the ship representative based on the nature of the cargo and conducts loading or unloading operations based on mutual agreement. No changes are made to the operation without the ship representative's knowledge.

e) Determines operational limits by considering the facility's safe working capacity and weather forecasts, and takes necessary measures to ensure the ship is safely moored and cargo handling is conducted securely.

f) Checks the transport documents to ensure that dangerous goods arriving at the facility are properly classified, packaged, marked, labeled, placarded, and safely loaded into cargo transport units.

g) Ensures that personnel involved in the handling and planning of dangerous goods have received and are certified for the necessary training, and does not assign uncertified personnel to such operations.

ğ) Ensures that dangerous goods handling equipment at the facility is operational and that personnel are trained and certified in its use.

h) Implements occupational safety measures at the facility and ensures that personnel use personal protective equipment appropriate to the physical and chemical properties of the dangerous goods.

ı) Conducts activities related to dangerous goods at docks, piers, and warehouses that are properly established for such operations.

i) Equips docks and piers designated for loading or unloading dangerous liquid bulk cargoes

with suitable installations and equipment.
j) Maintains an up-to-date list of all dangerous goods in closed and open areas of the facility and ships berthed at the facility, and provides this information to relevant parties upon request.
k) Reports the instantaneous risk posed by temporarily stored or handled dangerous goods and the measures taken to the port authority.
l) Reports accidents related to dangerous goods, including those occurring during entry into enclosed spaces, to the port authority.
m) Provides necessary support and cooperation during inspections and audits conducted by the authority and port authority.
n) Ensures the immediate removal of Class 1 (except Compatibility Group 1.4 S), Class 6.2, and Class 7 dangerous goods from the facility, which are not permitted for temporary storage. In cases where storage is essential, applies to the authority for permission.
o) Temporarily stores cargo transport units carrying dangerous goods in accordance with segregation and stowage rules and takes fire, environmental, and other safety measures appropriate to the class of dangerous goods in the storage area. Ensures that fire extinguishing systems and first aid units in areas where dangerous goods are handled are always ready for use and conducts periodic checks.
ö) Obtains permission from the port authority before conducting hot work operations in areas where dangerous goods are handled or temporarily stored.
p) Prepares an emergency evacuation plan for ships in case of emergencies and submits it to the port authority. Informs relevant parties about the approved plan.
r) Ensures that internal loading of cargo transport units is carried out in accordance with loading safety rules.

2.5 Responsibilities of the Ship Representative

The responsibilities of the ship representative are as follows: a) Ensures that the cargo to be transported is certified as suitable for transportation and that cargo holds, tanks, and handling equipment are in proper condition.
b) Requests all mandatory documents, information, and certificates related to dangerous goods from the consignor and ensures that these accompany the cargo throughout the transportation process.
c) Ensures that documents, information, and certificates required by regulations and international conventions regarding dangerous goods on board are appropriate and up to date.
ç) Checks the transport documents to verify that cargo transport units loaded onto the ship

are properly marked, placarded, and safely loaded.

d) Informs relevant ship personnel about the risks of dangerous goods, safety procedures, emergency measures, response methods, and similar topics.

e) Maintains up-to-date lists of all dangerous goods on board and provides them to relevant parties upon request.

f) Ensures that any loading program on board is approved, documented, and operational.

g) Reports the instantaneous risk posed by dangerous goods on board and the measures taken to the port authority and the port facility.

ğ) Refuses to accept dangerous goods for transportation if there is leakage or a possibility of leakage.

h) Reports accidents involving dangerous goods that occur during navigation or at the port facility to the port authority.

ı) Provides necessary support and cooperation during inspections and audits conducted by the authority and port authority.

i) Refuses to transport dangerous goods not listed in the ship certificates issued by relevant institutions and organizations.

j) Ensures that ship personnel involved in the handling of dangerous goods use personal protective equipment appropriate to the physical and chemical properties of the cargo during handling.

k) Ensures compliance with loading safety requirements for cargoes loaded onto the ship.

3. RULES AND MEASURES TO BE FOLLOWED/APPLIED BY THE SHORE FACILITY

The rules that must be followed by the ships berthing to the refinery's piers and their crews are described in this section.

Pier Safety Officer: The staff, who is responsible for safety performance of ship loading and unloading operations, which are assigned by Chief Operator of Marine Loading Unit.

Implementation

Ship captains must ensure that their entire crew learn the safety measures and comply with the given instructions.

An operator to be designated by Chief Operator of Marine Loading Unit will act as "Pier Safety Officer".

1. "Ship/Pier Safety Checklist" will be provided by pier safety officer to the ship captain and he is asked to fulfill the requirements in this list. After it is mutually checked that these requirements are met, the second copy of this checklist is signed by the ship captain.
2. Pier safety officer makes necessary safety checks, marks the checked issues on the checklist, corrects any problem that he notices and notes these issues down on the checklist and signs it. Before delivering the shift to the upcoming pier safety officer, he writes down necessary notes as well as the relevant date and shift and signs the checklist.

3. Ship/Pier Safety Checklists are kept at ship files of Marine Loading Unit.

General Rules

a. Smoking: It is not allowed to smoke and carry any lighter/match on the pier and the shipboard. If there is any safe ventilation system, it might be allowed to smoke within the ship hall, provided that doors and windows are kept closed. If it is deemed unsafe, refinery officer may ask not to smoke within the hall.
b. Ship's Crew on the Pier: The ship's crew cannot go down to and work on the pier without prior permission of the staff of Marine Loading Unit.
c. Petroleum/Petroleum Product Spills:
   - It is forbidden to discharge water mixed with oil and bilge water to the sea.
   - There will be sufficient amount of materials and equipment ready to use on the board of the ship in order to fight with any pollution that might occur on the ship and on the sea.
   - Scupper holes on the ship's deck will be kept closed in order to prevent any pollution on the ship to be discharged to the sea.
   - Costs of barriers, oil collector, boats and staff to be used for fighting with marine pollution will be claimed from the ship that caused the pollution.
d. Emergency Towing Ropes: Ships are hanging down steel towing ropes up to a level close to the sea surface from the front and rear sides in order to move away from the ship in case of a fire.
e. Passage between Pier and Ship: Ship and pier are jointly responsible to ensure safe passage between ship and pier. Life buoys with reflectors and ropes are available on the ship and pier.
f. Radio and Electrical Devices: Radar, medium and high frequency radios, non-ex-proof radios, phones and electrical devices cannot be used after the ship has berthed.
g. Fire, Lights, Lamps, etc.: While the ship is berthed, only ex-proof lights and flashlights, which are safe against oil vapor, will be used and hot works, such as welding, cooking with open fire, etc. will never be performed.
h. Cleaning of Boiler Tubes: The ship will never clean its boiler tubes, it will be ensured that no soot and black fume comes out of the ship's funnel and no boiler ash will be discharged to the sea.
i. Cleaning Works: Tank cleaning works are not allowed.
j. Repairing Works: No maintenance and repairing work can be performed without written permit of refinery's authorized officer. Lifeboat test, surveys, and other similar operations are not allowed.
k. Berthing of other marine vehicles to the ships: No marine vehicle can be kept around/berthed to the ship for supply purposes, etc. without permit of the ship's captain and refinery's authorized officer.
l. Wastes: No wastes will be discharged from the ship to the sea and pier.
m. Firefighting: Firefighting and emergency equipment will be kept ready to use at all times as long as the ship is berthed.
n. Emergency Alerts: The ship's siren is sounded in accordance with IMO codes in case of fire or any other emergency.
o. Machines: The ship will keep its machines ready to run to depart from the ship shortly.
p. It is forbidden to allow any staff, who is under the influence of a drug or alcohol, to enter the pier.

q. Control: The captain will allow pier's authorized officer and/or authorized port officers to check whether necessary safety measures listed above are taken and implemented within the ship or not.
r. Mooring of Ship to Pier: The ship's captain berth his ship to the pier in accordance with the instructions of pier's chief operator. The ship must be tied duly and with ropes to the pier. This is entirely under the captain's responsibility. If the refinery's authorized officer thinks that current conditions are not suitable, loading and unloading operations are not started until the conditions are corrected. It is not allowed to give ropes with steel frame to the pier. The ship takes necessary measures to ensure that its ropes are always kept tight in order to maintain its position at the pier. Ships, which are not instructed to berth, anchor at the anchoring location.
s. Loading and Unloading:
   - If pier safety officer finds safety measures insufficient, he/she refuses to start any loading and unloading. The reason of refusal is immediately notified to the Ship's Captain.
   - Loading/Unloading cannot begin without reaching an agreement on all items of "Ship/Pier Safety Checklist".
   - A qualified and experienced ship crew will be kept available on the deck during loading and unloading.
   - The handled product will never be leaked, preparations will be made for possible spillages, and the equipment necessary for spillages will be kept ready at the deck and pier during operations.
   - All external doors, hatches and port holes at living quarters, shops and machine sections will be closed during loading/unloading operations. The blower at the pump room must have been turned on 30 minutes before loading or unloading.
   - All covers, including the covers of permanent ballast tank, will be kept closed during loading/unloading.
   - Fire hoses will be kept ready for response on the main and rear deck and fire circuit will be kept under pressure. Preparations needed for international shore fire connection will be completed.
   - Any type of loading and unloading operation will be stopped during thunderstorms and stormy weather and covers of all measuring orifices will be tightly closed.
   - It is not allowed to load and unload fuel through another ship.
t. Control of Ship Manifolds: The Ship's Captain is kept responsible for all loading/unloading operations at the ship. The ship is responsible to prevent overflow of bunker fuel or cargo tanks. When it is close to finish the loading of cargo or bunker fuel tank, the ship's authorized officer informs the pier operator to reduce flow rate in order to prevent overflowing.

Permission to Enter the Refinery

u. The ship's crew is not allowed to enter the refinery on foot. It is allowed to pass through the refinery only by a vehicle to be provided by the refinery.
v. If the ship's crew requests to enter the refinery as required by his/her job, actions will be taken in accordance with the instructions on entering to and safety within the refinery.
w. Refinery Security Department is responsible for entrance and exit of ship's crew to/from the refinery.
x. Actions to be taken in case a fire outbreaks on the ship or pier:

- Pier staff calls relevant units for the fire. Loading or unloading works are stopped.
- Hoses or arms will be removed, ropes will be released and the ship will depart from the pier. - If necessary, emergency release hooks will be activated.
- The ship is towed by tow boats and immediately removed from the pier's safety zone. The ship and pier are responded with firefighting systems of tow boats.
- Existing fixed firefighting systems (automatic water and foam monitors) of the pier are used to respond to the fire.

4. CLASSES, SHIPMENT, DISCHARGING, HANDLING, SEPARATIONS, STACKING AND STORAGE OF DANGEROUS CARGO

4.1. Classes of Dangerous Cargo

Table 4.1 Dangerous Cargo, UN Codes and Classes

PRODUCT NAME	UN CODE	CLASS
Diesel	UN 1202	3
Unleaded Gasoline	UN 1203	3
LPG	UN 1965	2
Jet A-1	UN 1863	3
Vacuum Residue	UN 3257	9
Fuel Oil	UN 3082	9
Naphtha	UN 1268	3
Isomerate	UN 1268	3
Platformate	UN 1268	3
HVGO	UN 3082	9
Hc.Dip	UN 3082	9
MTBE	UN 2398	3
Crude Oil	UN 1267	3
Propane - Propylene	UN 1965	2
Solid sulphur	UN1350	4.1

Table 4.2 Wastes, UN Codes and Classes

Waste Code	Waste Definition under ANNEX-4 of Waste Management Regulation	Description	UN NO	UN CLASS
050102	Desalination sludges	A	3077	9
050103	Tank bottom sludges	A	3077	9
050105	Petroleum spillages	A	1993	3
050106	Oily sludges caused by operations or equipment maintenance works	A	3077	9
050107	Acid bitumens	A	3077	9
050108	Other bitumens	A	3077	9
050109	Sludges containing hazardous substances due to refining of waste water within the site	M	3077	9

050111	Wastes originating from cleaning of fuels with base	A	3082	9
050115	Used filter clays	A	3243	6.1
061302	Used active carbon (excl. 06 07 02)	A	1362	4.2
070104	Other organic solvents, washer fluids and main solutions	A	2810	6.1
070401	Water based washer fluids and main solutions	A	3082	9
080111	Waste paints and varnishes containing organic solvents or other hazardous substances	M	1263	3
080317	Waste printing toners containing hazardous substances	M	1210	3
090113	Fluid wastes originating from refining for recovery of silver other than 09 01 06	A	3082	9
120112	Used (candle) paraffin and oils	A	3077	9
120116	Wastes of sanding items containing hazardous substances	M	3077	9
130208	Other engine, transmission and lubrication oils	A	3082	9
130301	Insulation or heat transmission oils containing PCBs	A	3082	9
130310	Other insulation and heat transmission oils	A	3082	9
150110	Packages containing the residues of or contaminated with hazardous substances	A	3509	9
150202	Absorbers, filter materials (oil filter unless defined otherwise), cleaning rags, protective clothes contaminated with hazardous substances	M	1373	4.2
160107	Oil filters	A	3077	9
160114	Antifreeze fluids containing hazardous substances	M	3082	9
160209	Transformers and capacitors containing PCBs	*A*	2315	9
160213	Discarded equipment containing hazardous parts (3) other than those between 16 02 09 and 16 02 12	A	3077	9
160303	Inorganic wastes containing hazardous substances	M	3082	9
160506	Laboratory chemicals composed of or containing hazardous substances, including mixtures of laboratory chemicals	M	3082	9
160507	Discarded inorganic chemicals containing or composed of hazardous substances	M	3077	9

160508	Discarded organic chemicals containing or composed of hazardous substances	M	3077	9
160601	Lead batteries and accumulators	A	2794	8
160602	Nickel cadmium batteries	A	2795	8
160709	Wastes containing other hazardous substances	M	3077	9
160802	Hazardous transition metals (4) or depleted catalysts containing hazardous transition metal components	M	2881	4.2
161105	Primers and refractors containing hazardous substances, originated from non-metallurgical processes	M	3077	9
170204	Wooden, glass and plastic containing or contaminated with hazardous substances	A	3077	9
170409	Metal wastes contaminated with hazardous substances	M	3077	9
170410	Cables containing oil, bitumen and other Dangerous Cargo	M	3077	9
170503	Soils and stones containing hazardous substances	M	3077	9
170507	Railway pebbles containing dangerous cargo	M	3077	9
170601	Insulation materials containing asbestos	M	2590	9
170603	Other insulation materials composed of or containing hazardous substances	M	3077	9
170605	Construction materials containing asbestos	M	2212	9
180103	Wastes requiring a special process for collection and disposal in order to prevent infection	A	3291	6.2
190111	Bottom ash and clinker containing hazardous substances	M	3077	9
190806	Saturated or used ion exchanging resins	A	3077	9
200121	Fluorescent lamps and other mercury containing wastes	A	3506	8
200126	Liquid and solid oils other than 20 01 25	A	3077	9
200135	Discarded electrical and electronic equipment containing hazardous parts (7) other than those in 20 01 21 and 20 01 23	A	3363	9
200137	Wood containing hazardous substances	M	3077	9

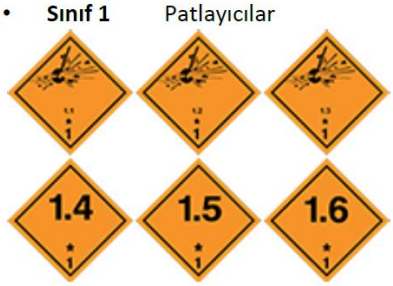
4.2. Packages and Packagings of Dangerous Cargo

Dangerous cargo are handled in our facility as bulk load.

4.3 Placards, plates, brands and labels for dangerous cargos

Packages containing dangerous cargos coming to the port facility and all Cargo Transport Units (CTU) will be marked, labeled and placarded as shown below within the scope of IMDG Code Section 5.2 and 5.3.

- **Sınıf 1** Patlayıcılar



- **Sınıf 2** Gazlar

Sınıf 2.1 Sınıf 2.2 Sınıf 2.3

- **Sınıf 3** Yanıcı Sıvılar

- **Sınıf 4** Yanıcı Katılar

Sınıf 4.1 Sınıf 4.2 Sınıf 4.3

- **Sınıf 5** Oksitleyici Maddeler ve Organik Peroksitler

Sınıf 5.1 Sınıf 5.2

- **Sınıf 6** Zehirli (Toksik) ve Bulaşıcı Maddeler

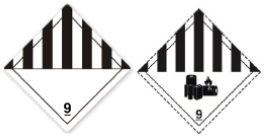
Sınıf 6.1 Sınıf 6.2

- **Sınıf 7** Radyoaktif Maddeler

Kategori 1 Kategori 2 Kategori 3

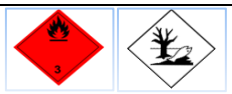
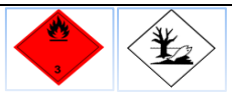
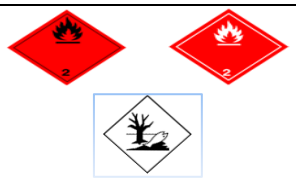
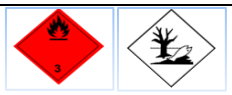
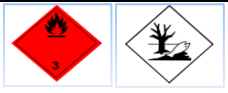
- **Sınıf 8** Aşındırıcı (Korozif) Maddeler

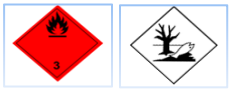
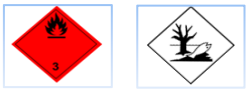
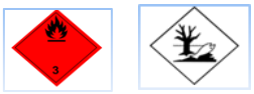
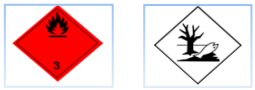
- **Sınıf 9** Farklı Tehlikeli Madde ve Nesneler ve Çevreye Zararlı Maddeler



4.4 Markings and packing groups of dangerous cargos

Table 4.4 Dangerous cargo Handled in our Facility, Their UN Code, Class, Marking and Packaging Group

PRODUCT NAME	UN CODE	CLASS	Markings	Packaging Group
Diesel	UN 1202	3		PG III
Unleaded Gasoline	UN 1203	3		PG II
LPG	UN 1965	2		
Jet A-1	UN 1863	3		PG III
Vacuum Residue	UN 3257	9		PG III
Fuel Oil	UN 3082	9		PG III
Naphtha	UN 1268	3		PG I

Isomerate	UN 1268	3		PG II
Platformate	UN 1268	3		PG I
HVGO	UN 3082	9		PG III
Hc.Dip	UN 3082	9		PG III
MTBE	UN 2398	3		PG II
Crude Oil	UN 1267	3		PG III
Propane - Propylene	UN 1965	2		
Solid Sulphur	UN1350			PG III

4.5. Separation tables on the ship and in the coastal facility according to the classes of dangerous cargos

Dangerous cargos separation table for dangerous cargo handled in our shore facility is given below. This table includes general provisions for separation and if there are special provisions for the substances to be handled, these special provisions shall have the priority.

4.5 Separation Table of Dangerous Cargo Handled in our Facility, based on their Classes

CLASS	1.1 1.2 1.5	1.3 1.6	1.4	2.1	2.2	2.3	3	4.1	4.2	4.3	5.1	5.2	6.1	6.2	7	8	9
Combustible Gases 2.1	4	4	2	X	X	X	2	1	2	X	2	2	X	4	2	1	X
Inflammable Liquids 3	4	4	2	2	1	2	X	X	2	1	2	2	X	3	2	X	X
Various Hazardous Substances 9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Numbers and symbols used in the table have the following meanings:

1– “Must be kept away”;
2– “Must be separated”;
3– “Must be kept separated through an entire compartment or section”;
4– “Must be separated longitudinally through an intervening compartment or section”
X- “There is not any interaction”

4.6 Separation distances and terms of dangerous cargos in warehouses

Class 4.1 Flammable Solids: Highly flammable solids and articles, self-reactive solids or liquids, solid desensitized explosives are included in this class.

Features; Exothermic, toxic, explosive, self-degrading, oxidizing

These substances require temperature control.

Example; Sulfur

Hazard Warning Signs

Class 4.2 Self-Combustible Substances: Oxygen is released when combined with flammable materials, it burns easily in contact with sparks, fire, hot surfaces, and self-combustible materials are included in this class.

Features; Sensitivity to temperature, reaction with water, toxicity.

Example; petroleum coke

Hazard Warning Signs

5. MANUAL FOR HAZARDOUS LOADS HANDLED AT THE SHORE FACILITY

Our coastal facility, which carries out dangerous cargo loading/unloading, handling and temporary storage activities, in order to contribute to the safe performance of these activities;

A Dangerous cargos Handbook in pocket sizes is prepared and made it available to the facility employees which includes dangerous cargos classes, packages, packages, labels, signs and packaging groups of dangerous cargos, separation tables of dangerous cargos on the ship and in the port, separation distances of dangerous cargos in warehouse storage, separation terms, dangerous cargos documents, dangerous cargos emergency response action flow diagram, emergency situation contact information, emergency equipment locations and operating instructions and shore facility rules.

6. OPERATIONAL ISSUES

6.1 Procedures for safe berthing, mooring, loading/discharging, sheltering or anchoring of ships carrying dangerous cargos day and night

Calling the Ships to Pier:

Each ship that enters Izmit Port and submits preparation letter for loading/unloading at our Refinery is not required to berth to our piers. The only sine qua non for berthing of ships that arrived for loading purposes is the existence of loading order. Loading order is created by Sales and Logistics Department of our Refinery through SAP system. Berthing order is determined by SAT for the ships with a loading order. Marine Loading Unit displays loading orders on VL10H page of SAP system and ships with loading order inform Petroleum Movements Unit when they enter the Port and issue NOR. After two units reach an agreement the ships berth. Marine Loading Unit may change the piers to be berthed due to technical requirements, provided that prioritizations assigned by SAT are not changed.

After all procedures are completed the ship is called by radio to berth to the decided pier. Pilotage organization as well as the ship's agency are also notified to inform the ship in addition to notifications made by radio for importation/exportation shipments. The time, on which the ship was called to berth, is noted at Remarks section of the Time Sheet for importation/exportation shipments.

Pilotage, Towage and Mooring Services:

500 GT and larger tankers and ships and marine vehicles carrying any hazardous substance, 1000 GT and larger Turkish flagged ships and marine vehicles, 500 GT and larger foreign flagged ships and marine vehicles and any foreign flagged commercial and private yacht longer than 55 meters and larger than 400 GT are required to take harbour pilot when berthing to or departing from the shore facilities specified in the Regulation on Amending the Regulation on Ports, issued by the Ministry of Transport and Infrastructure and published on the Official Gazette, dated 20 October 2015 and no. 29508. All foreign flagged military ships are required to take harbour pilot when entering to and departing from non-military shore facilities. 1000 GT and smaller bunkering ships that berth and depart to/from the anchored or berthed ships for going alongside or that berth to the shore facility in order to receive bunker load are not required to take any pilot, including stage navigations within the port fields with pilotage stage navigation.

Article 5 of the same regulation states "Principles on taking pilotage and towage services".

“(4) Vessels with bow and stern thrusters or thruster systems, except for tankers carrying hazardous cargo and except for ships and marine vehicles with a LOA of more than 200 meters, shall, after the ship’s representatives submit the documents relating to thrusters or thruster systems and declare to the port authority in writing that such thrusters or thruster systems are functioning in full capacity, upon their arrival at the terminal, be allowed to berth and sail with one tugboat less than the number of tugboats written in Table 6.1, provided that their total towing force is not reduced by more than 40% and total towing force of ships with bow and stern thrusters or thruster systems is not reduced by more than 30%.”

“(5) Tugboats that must be taken by passenger ships and towing force and numbers of these tugboats are given in the below table. If the ship’s authorized representatives present the documents for the ship’s bow and stern thrusters or thruster systems, stating that these systems are functioning in full capacity, at least one tugboat with minimum towing force of 16 tons is allocated for ships between 55 and 125 meters and at least one tugboat with minimum towing force of 30 tons is allocated for ships at least 126 meters long, however if no such declaration is made, the tugboats with below mentioned towing force are allocated. Ships, which are required to take a tugboat due to their length but are not required to take a harbour pilot due to their gross ton capacity, are not required to take tugboats.

Table 6.1 Minimum Towing Force and Number of Tugboats Based on the Ship Length

Ship Length	**Total Towing Force (minimum)**	**Description**
Between 55 – 125 meters	At least 30 tons	1 tugboat with 30 tons of towing force or 2 tugboats, each has minimum 16 tons of towing force.
Between 126 – 200 meters	At least 45 tons	1 tugboat with 45 tons of towing force or 2 tugboats, each has minimum 30 tons of towing force.
Between 201 – 300 meters	At least 60 tons	1 tugboat with 60 tons of towing force or 2 tugboats, at least one of them has minimum 30 tons of towing force.
301 meters and longer	At least 90 tons	1 tugboat with 90 tons of towing force or 2 tugboats, at least one of them has minimum 30 tons of towing force.

Mooring boat service:

These are the services to give the breast fast of the ship while the ship is berthing and to take the breast fast from the pier while the ship is departing in order to help the ship in maneuvering.

6.2 Procedures for additional measures to be taken according to seasonal conditions for the loading, unloading and transshipment operations of dangerous cargos

In case of a storm, loading and discharges are stopped according to the size of the storm, the arms are removed and the fields are checked. Loading/discharging is stopped when the wind speed is 35 Knots. The loading arms are removed when the wind speed is 40 Knots. The ship leaves the port when the wind speed is 45 Knots.

6.3 Procedures for keeping flammable, combustible and explosive materials away from processes that create/can create sparks and not to operate vehicles, equipment or tools that create/can create sparks in dangerous cargos handling, stacking and storage areas

Our procedures for keeping combustible, flammable and explosive substances from operations that cause/may cause sparks and for not operating any tool, equipment and device that

causes/may cause spars at hazardous load handling, stowage and storage fields are given below:

The area or equipment, at which Hot Works will be performed, must be cleaned from hydrocarbons.
For this purpose, 0% LEL value, stating that the system/field/equipment is completely cleaned from hydrocarbons, must be achieved and confirmed by a Gas Detector, the calibration of which is valid and verified by Bump Test. If it is found suitable to perform the work after taking necessary precautions and completing Risk Assessment, it is allowed to perform the Hot Work.
Gas measurement frequency is determined by the Operational Safety Expert, based on the work to be performed and conditions of the location.
The possibility of generation of heat or spark within 15 m. radius of the area to be worked is evaluated and necessary controls are made and precautions are taken.
If there is not enough firefighting equipment, Hot Work Certificate is not issued.
If the system, field or equipment cannot be completely cleaned from hydrocarbons and 0% LEL value cannot be achieved despite of all precautions, Hot Work can be performed under the following conditions. No Hot Work is allowed at areas, at where LEL value is more than 10%.
Regardless of the person performing the work and the work method, a comprehensive risk assessment is made by Work Requester, Permit Requester, and Permit Owner. Prepared Work Hazard Analysis is reviewed and signed by Chief Engineer of relevant unit. This approval is given by On-Call Shift Supervisor on weekends and holidays if the unit's chief engineer is not available.
After Work Hazard Analysis is prepared for the work to be performed, the measures that have been planned to be taken by IEU and Permit Officer are verified on the field.
In case 0% LEL value cannot be achieved, gas is continuously measured and the environment as well as relevant equipment are always kept under control.
A supervisor is kept continuously on the field and Hot Work is allowed to be performed in a controlled manner.

7. DOCUMENTATION, CONTROL AND RECORDS

7.1. All Mandatory Documents, Information and Certificates for Dangerous Cargo and Procedures for Providing and Controlling Them

Load related documents exchanged with the staff of marine tanker before and after the handling of hazardous substance in the shore facility are given below:

Delivery Order (received from Port Authority)

Preparation Letter (NOR(prepared by Ship and Agency)

Ship/Shore Safety Checklist (Ship and TÜPRAŞ are using separate checklists)

Loading Protocol (TÜPRAŞ)

Product MSDS (TÜPRAŞ in case of loading, ship in case of unloading)

In case of loading

- Load Report (Certificate of Quantity) (TÜPRAŞ)
- Time Sheet (TÜPRAŞ and Ship)

- Analysis Report (Certificate of Quality) (TÜPRAŞ)
- Transfer Form for Wastes (TÜPRAŞ)
- Protest Letters (TÜPRAŞ and Ship)
- Cargo Manifest (Ship)
- Vessel Experience Factor (Ship)
- Empty tank certificate (Inspector company)
- Fuel Delivery Form (Domestic Loading) (TÜPRAŞ)

In case of Discharging

- Bill of Lading (Loading port of the ship)

7.2. Procedures for Keeping Updated List of All Dangerous Cargo in the Shore Facility and Other Related Information Orderly and Completely

Dangerous Cargo handled in our shore facility are shown in Table 4.2. As new Dangerous Cargo are handled in our shore facility, these will be shown in the revisions of Dangerous Cargo Handling Guide. Since Dangerous Cargo Handling Guide will be published in Quality Management System under the document management system of TÜPRAŞ, if a revision is made all users will be notified.

7.3. Procedures for Controlling that Received Dangerous Cargo are Appropriately Defined, Correct Shipment Names are Used for Hazardous Load, they are Properly Certified, Packaged, Labeled and Declared, they are Loaded Safely to Appropriate Packages, Containers and Load Transportation Units, and they are Transported Safely and for Reporting the Results of Control

There are MSDS and analysis reports of Dangerous Cargo delivered to our facility. Additionally, samples are taken from ship's tanks and analyzed before unloading. The quality of declared product is approved according to the results.

Dangerous Cargo are carried to our refinery as bulk cargo in the cargo tanks of ships. Packaged Dangerous Cargo are not processed in our facility. The ship is accepted by our refinery after it is approved by us before our facility is informed that the ship's cargo tanks are approved and calibrated by relevant authorities.

7.4. Procedures for Obtaining and Keeping Material Safety Data Sheet (MSDS) of Hazardous Substance

All products and chemicals handled in our refinery are available in Quality Management System of Document Management System of TÜPRAŞ. TÜPRAŞ staff may login Quality Management System to view the documents and, if requested, they can printout MSDS of relevant product.

7.5. Procedure for Keeping Records and Statistics of Hazardous Loads

Records of all products handled in our refinery are kept in SAP system. These records can be viewed retrospectively and they are stored in the system without any time limit.

7.6 Information on the Quality Management System

ISO 9001:2015 quality management system is implemented.

8. EMERGENCY, BEING READY FOR EMERGENCY AND RESPONDING

8.1 Response procedures for dangerous substances with risks to life, property and/or the environment and dangerous situations involving dangerous substances

We have a standard for fighting with the pollution of sea, rivers, and soil as a part of responding to Dangerous Cargo and dangerous situations involving Dangerous Cargo that do/may pose a risk to life, properties and/or environment.

8.1.1. Purpose

The purpose of this standard is to identify the methods and organizations and to determine the tasks and responsibilities in order to take measures against pollution of sea, rivers and soil within and around Tüpraş refineries and minimize the damage of oil and chemicals, composed of petroleum and petroleum products, to the environment.

8.1.2. Implementation

If one or more than one of the situations listed below occurs, this standard will be implemented by Refinery Manager, relevant unit manager and/or the Supervisor on Duty.

- Technical failures and/or accidents, causing oil or chemical spillages at the units, which cannot be brought under control by the relevant unit and/or Waste Water Refining (ASA) unit by its own;
- In case oil and/or chemical spillages caused by the tanker ships berthing to the piers or land tankers, which cannot be brought under control by the tanker;
- Large scaled oil and/or chemical spreads as a result of a natural disaster and/or sabotage and/or explosion and fire that occurred within and around the refinery.

If any spillage occurs as a result of a potential emergency, the staff at various units of Tüpraş are assigned. The relevant Unit Manager, at where the spillage has occurred, will inform Refinery Manager and Technical Safety and Environment Manager in case any of the situations described below occurs. Staff of Technical Safety and Environment Department will make an announcement through the radio for relevant groups and ensure that equipment, materials and staff is ready for fighting with the pollution as soon as possible.

8.1.3. Organization Chart for Fighting with Pollution of Sea / River and Soil and Assigned Positions

Supervisor for Fighting with Pollution of Sea / River and Soil

Relevant Unit Manager or, the Supervisor on Duty on non-business days.

Responsibilities of Supervisor for Fighting with Pollution of Sea / River and Soil

- To implement the Standard of Fighting with Pollution of Sea/River and Soil and ensure coordination of refinery groups fighting with the pollution.
- To monitor and evaluate the incidents and to take and implement decisions based on conclusions of such evaluations.
- To identify the requirements under his/her responsibility, to meet these requirements as much as possible and to inform Refinery Manager about the requirements that couldn’t be met.
- To inform surrounding organizations and relevant municipalities.

- To receive meteorological and hydrological information and projections and make an assessment.
- To inform local authorities of province or district and Police Department and, if the scale of incident reaches to a disaster situation, to implement Disaster Plan upon obtaining the approval of Refinery Manager. To contact with relevant authorities in the Disaster Plan. To contact with Garrison Command and Navy and to inform these authorities about the incidents. To inform neighboring municipalities and, if necessary, to ensure that necessary teams and equipment arrive the incident site as soon as possible.
- To inform Tüpraş Head Office about the developments and practices upon obtaining the approval of Refinery Manager.
- To inform the media about the incident and developments upon obtaining the approval of Corporate Communication Department of Head Office, to follow the news on media and inform relevant authorities.

8.1.4. Equipment and Materials to be Kept Available

- Inflatable, solid or fence barriers;
- Oil scraper equipment;
- Oil or chemical absorbing barriers;
- Oil or chemical absorbing pads or absorbents;
- Impermeable waste storage barrels and neoprene tanks;
- Portable dispersant spraying equipment;
- Response boat and tugboats;
- Pressurized water cleaning equipment;
- Emergency illumination;
- Maps showing the refinery and surrounding companies;

Responsibility of Equipment and Materials to be Kept Available

Relevant Directorate and Technical Safety and Environment Department are responsible to supply the equipment and materials and to ensure they are functional.

Groups that are Going to Fight with Pollution of Sea / River and Soil

Production Group Department

- Coordinator: Production Managers and Chief Engineers
- Tasks and Responsibilities:
  - To find the location of oil or chemical leakage and to stop the leakage.
  - If necessary, to stop the units.
  - To keep the facilities always under control.
  - To continuously contact with Supervisor for Fighting with Pollution of sea/river and soil.
- Teams: Staff of Production Group Department.
- Required Materials: Sufficient number of tools and radios.

Group for Fighting with Pollution of Sea / River and Soil

- Coordinator: Technical Safety and Environment Manager, Technical Safety Chief Engineer, Chief Engineers of Production Group Department and Maintenance and relevant unit Chief Engineers.

- Tasks and Responsibilities:
  - To keep the tools and equipment for fighting with pollution of sea/river and soil ready and in good condition.
  - To give advices to the supervisor for fighting with pollution of sea / river and soil.
  - To make suggestions to teams of neighboring organization, which came for help, in fighting with pollution of sea and soil.
  - To maintain communication via central radio channel.
  - To continuously inform the Supervisor for Fighting with Pollution of sea/river and soil about the developments.
  - To ensure necessary teams are formed, based on the size of pollution.
  - To ensure that tugboats are used, barriers are opened, pollution is surrounded by barriers and fighting efforts continue in case of pollution of sea/river.
  - To decide on the technique of cleaning and fighting with pollution, based on the plan for responding to oil and chemical pollution.
  - To clean the pollution and contaminated equipment.
  - To ensure that polluted area is cleaned and recovered in case of soil pollution and to ensure that contaminated materials and wastes are stored and disposed temporarily in accordance with applicable regulations.
  - To take samples from pollution zones.
  - To take samples from soil and water after the cleaning and make them analyzed by a science institution.
- Team Supervisor: Workers' Health and Safety Chiefs, ASA Chiefs, Marine Loading Chiefs, Maintenance Chiefs
- Team Members: Technical safety staff, Marine works staff, Maintenance staff

Technical Advisor Group

- Coordinator: Process Chief Engineers of Production Group Department, Manager and Chief Engineers of Projects and Investments
- Tasks and Responsibilities:
  - To assist the Group for Fighting with Pollution of Sea / River and Soil for technical issues, to monitor and follow the works of other groups.
  - To take chronological records of incidents and developments, to report the works and submit this report to refinery manager.
  - If necessary, to provide technical information and documents to the members of Group for Fighting with Pollution of Sea / River and Soil.
  - To take samples from pollution zones.
  - To take samples from soil and water after the cleaning and make them analyzed by a science institution.
- Teams: Production Department Staff (Process, Lab.) Project and Control Department Staff
- Required Materials: Sufficient number of tools and radios.

Maintenance Group

- Coordinator: Maintenance Managers and Chief Engineers
- Tasks and Responsibilities:
  - To clean and maintain the equipment for fighting with pollution of sea / river and soil.
  - To meet fuel needs of equipment.
  - To supply requested vehicles, such as cranes, forklifts, trucks, etc. and their drivers.
  - To supply the staff that will perform the cleaning works.
- Teams: Staff of Maintenance Group Department
- Required Materials: Necessary equipment and cleaning materials, Fuel tanker, Sufficient number of tools and radios

Procurement Group

- Coordinator: Procurement Manager and Coordinators
- Tasks and responsibilities:
  - To provide required materials from warehouse to user.
  - To obtain the materials, which are not available in the warehouse, from refineries and domestic and international markets.
- Teams: Procurement Department Staff
- Required Materials: Sufficient number of tools and radios.

8.1.5. Staff that must be Available in the Facility for Emergency Response

Risk levels of the facility that belongs to TÜPRAŞ Izmit Refinery and corresponding estimated spillage amounts, which are calculated according to the amount of spillage that must be taken into consideration based on the facility's risk assessment, are given in Table 8.1.1.

Table 8.1.1. TÜPRAŞ Izmit Refinery Spillage Levels

Spillage Level	Estimated spillage quantity (m^3)
1	≤6
	6 – 125
2	126 – 38000
3	> 38000

In case of spillages covered by Level 1 as described in Article 7 of the Regulation, Emergency Response Team of TÜPRAŞ Izmit Refinery will take necessary actions. Petroleum spillage response service is being received from ....., an organization authorized by the Ministry of Transport and Infrastructure of The Republic of Turkey, for Refinery Level 2 spillages, and from .....

In case of Level 1 spillage that might occur at TÜPRAŞ Izmit Refinery, the Field Response Team, described in Table 8.1.2, will respond. Field Response Team is composed of Marine, Land and Air Operation teams, which include 22 persons in total. 10 persons are assigned to Marine Operations Team. Basically 4 persons are enough to lay the barrier to the sea in a manner to surround the spillage, 3 persons are enough to collect petroleum with oil scraper, and 3 persons are enough to transfer and store the collected waste safely in Level 1

operation. Shore Operations Team is composed of 10 persons. These persons are responsible to set up temporary storage tanks on the shore, to create the zones, to install decontamination units, and, in later stages, to monitor vehicle traffic and clean the petroleum that wash ashore. Air Operations Team is composed of 2 persons, who will be assigned to observe the incident site through the air. If there is no need to observe through the air, these persons will support Marine or Shore Operation Teams.

Since the amount of spillage is increased in Level 2 and 3, the number of staff to respond to the incident on the site must also be increased. More staff will be needed in laying barriers and sorbent materials down, using and filling and unloading the storage barges, using the oil scrapers and for other similar marine and shore operations. Since the number of equipment and amount of collected waste will be increased, the number of staff might be increased by 2 to 6 times in order both to perform and coordinate the operations. Petroleum spillage response service is being received from ....., an organization authorized by the Ministry of Transport and Infrastructure of The Republic of Turkey, for Refinery Level 2 spillages, and from ....., an international organization, for Level 3 spillages. Site Response Team of the Refinery will also support the operations in case of Level 2 and Level 3 spillages.

If the spillage is Level 2 or Level 3, Regional and National Emergency Response Centers will participate and provide support in terms of equipment, staff and logistics.

Operation Team

Tasks and responsibilities of the staff, included to organizational chart of Operation Team, are summarized below.

Emergency response system is executed by the Incident Site Coordinator and Incident Safety Unit reporting to him/her under the chairmanship of Operation Coordinator and, if needed, teams composed of Advisors and Planning, Operations, Logistics and Administrative/Financial Affairs join them. Press and Public Relations Unit reports to Operations Coordinator.

Incident Management Group

Operations Coordinator acts as the person fully authorized by the management in order to mobilize internal and external resources by supporting the mobilization of Site Response Team, to develop response strategies, and to determine requirements.

Incident Site Coordinator is responsible for the management of operation site. He is also responsible for reporting observations about the incident site and for execution of operations on the incident site in coordination with Operations Coordinator. He is responsible to organize the works to be performed on the source of spillage and to decide for mobilization of response sources.

Incident Safety Officer is responsible for taking all safety and security measures at the incident site during the operations. He is also responsible for continuation of the operations in a safely manner by taking the Site Response Team into consideration first.

Press and Public Relations Officer is responsible to inform internal and external organizations and to organize and manage any press release (printed and visual media, such as television, newspapers, etc.) issue and public procedures.

Advisor Units will take a role as advisors in continuation of operations in coordination with Incident Site Coordinator and in development of response techniques.

Planning Group

Planning Group Lead is responsible for planning the short or long term operation, ensuring the coordination of situation, resource and environment plans, and implementing these plans by reporting to Incident Site Coordinator.

Planning Officer is responsible to provide strategic support to Planning Group Lead and to implement and follow up the plans.

Situation Officer is responsible to collect and report information about the incident and situations in implementing the plans.

Resource Officer is responsible to evaluate and track the staff, equipment, tools and materials needed for operations.

Environment Officer is responsible for management of all environmental issues, performance of environmental assessment, provision of permissions, environmental monitoring and damage assessment during the operations.

Advisor/Voluntary Persons Officer is responsible for communication with the persons, who are out of the facility and want to take a role in the operation, depending on the size of operation.

Operations Group

Operations Group Head is responsible for administration of marine, shore and air response operations under the management of Incident Site Coordinator. He/she is also responsible for ensuring the coordination of Site Response Team and for performing the operations.

Marine Operations Officer leads Marine Operations Team and is responsible for coordination of the team that performs the operations on the sea and for utilization and management of necessary equipment, materials and tools.

Shore Operations Officer leads Shore Operations Team and is responsible for coordination of the team that performs the operations on the shore and for utilization and management of necessary equipment, materials and tools.

Air Operations Officer leads Air Operations Staff and is responsible for administration of situations, which require performance or observation of operations through the air.

Wild Life Officer is responsible for cleaning, caring and recovery of animals that were affected from the pollution.

Workers' Health and Safety Officer is responsible for evaluating health and safety issues that might occur during the performance of response operations and for taking necessary measures.

Waste Management Officer is responsible for collection, storage and disposal of wastes occurred after the response.

Resource/Equipment Officer is responsible for operation, maintenance and repairing of resources and equipment, which are used for effective and safe performance of response.

Logistics Group

Head of Logistics Group is responsible for follow-up and provision of any resource and service, such as staff, equipment, hardware, protective materials, food, etc., which are needed for commencement, continuation and finishing of operations.

Procurement Officer is responsible for procurement of any resource, such as staff, equipment, hardware, protective materials, food, etc., which are needed for commencement, continuation and finishing of operations.

Services Officer is responsible for provision of any service needed for commencement, continuation and finishing of operations.

Medical Officer is responsible for monitoring any health problem that might arise during the operations and provision of necessary healthcare services.

Communication and Documentation Officer is responsible for preparation of documents, such as accident notification reports, response reports and status notification reports regarding the incident site, provision of communication records and keeping the documents updated.

Security Officer is responsible for keeping the healthcare services available for any healthcare issue that might occur during the response operations.

Transportation Officer is responsible for providing transportation services throughout the operations.

Meal Officer is responsible for providing and follow-up of dining services throughout the operations.

Location Officer is responsible for creating and managing safe zones for staff, equipment and other resources throughout the operations.

Administrative and Financial Affairs Group

Head of Administrative and Financial Affairs Group is responsible for management of financial aspects of response operations, controlling and reporting the costs, coordinating the insurances and service agreements by reporting to Incident Site Coordinator.

Accounting Officer is responsible for keeping the records of costs of operations and carrying on the accounting operations.

Insurance Officer is responsible to examine the damages under the insurance and to provide necessary documents for supporting compensation claims of insurance companies.

Claims Officer is responsible for follow-up of financial claims that emerge after the incident.

Administrative Affairs Officer is responsible to follow up the sustainability of all services in terms of administration during the operations.

Records Officer is responsible to keep and track the records of all actions performed during the operations.

Site Response Team

The Site Response Team, which will be assigned to the incident site to respond to the spillage under the leadership of Marine Operations Officer, Shore Operations Officer and Air Operations Officer, is given in Table 8.1.2 below.

Table 8.1.2. Site Response Team

Marine Operations Team	Marine Operations Production Leader
	Marine Operations Lead Engineer
	Marine Operations Senior Engineer
	Marine Operations Engineer
Shore Operations Team	Environmental Control Chief
	Environmental Control Engineer
Shore Operations Team	Environmental Control Inspectors

Field Response Team is composed of Marine Operations, Land Operations and Air Operations teams.

Tasks of Marine Operations Team is to perform all marine operations. When responding to a petroleum spillage, the initial work to do on the sea is to lay down petroleum barriers, which will prevent spread of oil on the sea. Marine Operations Team is responsible for laying down the barriers, unloading and operation of oil scrapers, which ensure to collect oil from the sea surface, operation of pumps, utilization of sorbent barriers and materials, floating and operation of temporary storage tanks on the sea, collection of oil, and all other operations being performed on the sea.

Tasks of Shore Operations Team is to ensure that zones are created on the shore, decontamination fields are established, temporary storage tanks are set and shore is cleaned.

Air Operations Team is responsible to observe the incident site by air or helicopter.

If there is not any air operation, they will support the team that needs support.

8.2. Details of the Shore Facility's Capabilities and Capacity to Respond to Emergency

8.2.1. Response Strategy

The response strategy in a petroleum spillage differs, depending on the level of spillage. There are three levels of response: Level 1 response is for the spillages, which can be responded by the facility with its own resources and capacity, Level 2 response is for regional spillages, for which the facility's resources and capacity are not enough and support is needed, and Level 3 response is for national and/or international spillages, for which regional capacity is not enough.

The response strategy in TÜPRAŞ Izmit Refinery is initially based on protecting the human life and environment and then responding to petroleum spillage effectively and quickly. Additionally, precautions and response methods, stated in Safety Data Sheets of petroleum and petroleum products, which are transferred to ships by pipelines in TÜPRAŞ Izmit Refinery, are also taken into consideration when responding to the spillage. Response strategies must be determined according to the resources and capabilities of the facility and targets and methods to be applied.

Any equipment, material and staff, which will be used for any petroleum spillage in TÜPRAŞ Izmit Refinery, are already available within the refinery. The company, titled ....., with which TÜPRAŞ Izmit Refinery has a contract for responding to petroleum spillages, immediately responses to and prevents the spread of petroleum spillage and implements the most suitable response methods.

Generally, following elements are important in determining the strategy to respond to a petroleum spillage on the sea:

- Determining the size of spillage;
- Estimating the quantity of spillage (estimating the quantities of substances floating on the sea surface, spread under the sea, settled down on the sea floor and washed ashore);
- Surrounding some part or all of the ship with blocking barriers in order to block, collect and recover the spread of substance on the pier;
- Utilization of open sea barrier in order to collect the petroleum, which spreads on the sea surface, with floating oil collecting system in order to block and collect the spillage;
- Utilization of oil scrapers at various capacities in order to collect the petroleum from sea surface;
- Utilization of special storage barges in order to store recovered petroleum on the sea;
- Collection of petroleum through petroleum collection systems, which were designed in accordance with different purposes in order to recover the shore;
- Real-time collection of details about the spread and behavior of spillage;
- Analysis of materials and methods required to collect and remove petroleum from the entire shore in order for cleaning purposes;
- Regular monitoring of affected area after the incident.

Response Strategy in Small Leakages

If the amount of leakage is small (e.g. 125 m^3 and less), the leakage is responded as Level 1, based on the wind and currents. For this purpose, modeling maps must also be taken into consideration and direction of spread of petroleum must be monitored. If the wind is blowing from the west, petroleum will spread towards inner sections of the gulf. In this case the leakage is surrounded with barriers as soon as possible and collected from sea surface by scrapers. If the leakage has expanded and moved towards the open sea, it is followed by petroleum response boat and oil scrapers and petroleum is collected from sea surface. Petroleum is also surrounded by open sea barrier in order to keep it at that area. While petroleum is collected from sea surface, it must also be transferred to storage tanks, which provide temporary storage on the sea. If the wind is blowing from east during the response, since petroleum spillage may move towards Marmara Sea, the situation might be critical. If the leakage can be taken under control, it is possible to intervene with scrapers. If the leakage has occurred under a calm and non-windy weather, it must be surrounded with barriers and collection must be started immediately with scrapers. Sensitive areas must be taken into consideration and, if necessary, they must be included to response strategies. The spillage must be swiftly taken under control without affecting the marine traffic since the region is industrially significant. Operations Coordinator and Incident Site Coordinator must conduct Net Environmental Benefit Analysis together with relevant units.

Response Strategy in Large Leakages

Current capabilities of the refinery might not be sufficient in case the amount of spillage is big. If the leakage has drifted towards the open sea, it can be tracked by a small airplane or helicopter under Level 2 response. When modeling the spread, it is seen that the leakage affects eastern shores of TÜPRAŞ Izmit Refinery with the wind that blows from northwest. In this case, tracking and decision making form a significant part of response process. Level 2

response team must transport staff and equipment to sensitive shores, which might be polluted by the petroleum, and must take necessary measures. Relevant entities and organizations must also be informed, capabilities must be increased and Level 2 response team must be supported. Since the gulf is a semi-closed gulf, fishing is a very important activity and the gulf is the habitat of various species. Therefore, mechanical actions must be taken in priority when determining the response strategy.

8.2.2. Materials, Equipment and Vehicles that must be Available in the Facility for Emergency Response

Marine Vehicles

Marine vehicles are needed to lay down the barrier onto sea surface, transport response resources to the spillage area and collect the petroleum from the sea in case of a spillage.

Boat is used to transport equipment and response staff, which are needed for operations, to the spillage area. It is also needed to surround the spillage with barrier in an effective manner by directing the barrier.

Barge is temporary storage equipment, which ensures that the petroleum that is collected from sea surface is stored on the sea during the response. The petroleum that is collected from sea surface by scrapers is transferred to barges and then they are transported to the shore in order to dispose the stored petroleum.

Tugboat is a marine vehicle that pilots ships for their safe navigation during berthing and sailing maneuvers.

Mooring Boat ensures that the ship's ropes are delivered to the pier and then tied to the pier by land hawsers. This boat also ensures that the ship's ropes are appropriately handled while the ship is sailing.

All domestic and foreign ships within the borders of TÜPRAŞ Izmit Refinery port are required to use the minimum number of tugboats as well as mooring boats in accordance with the provisions of Port Regulations, Procedures and Instructions and TÜPRAŞ's Standards when entering to and sailing from our port field and/or relocating within the port for any reason.

Towage and mooring services are provided by the facility within TÜPRAŞ Izmit Refinery and marine vehicles are kept ready at the tugboat pier within the refinery's borders. There are 2 fire water lines, respectively 12" and 20" capacity, at the tugboat pier and each tugboat is equipped with firefighting equipment. 5 tugboats within TÜPRAŞ Izmit Refinery are delivered to TÜPRAŞ Izmit Refinery, provided that they owned by and marine services are managed by T DAMLA Denizcilik A.Ş.

While the ships are berthing and sailing, it is required to receive towage services in TÜPRAŞ Izmit Refinery in accordance with the tariff, which has been determined as 1 tugboat for ships between 2000 and 5000 GRT, 2 tugboats for ships between 5001 and 15000 GRT, 3 tugboats for ships between 15001 and 30000 GRT, and 4 tugboats for ships bigger than 30001 GRT. There are also 4 mooring boats operating within the borders of TÜPRAŞ Izmit Refinery.

Oil Barriers

Oil barriers are used to allow collection, surrounding and redirection of petroleum from the sea surface and they are also used to prevent the petroleum to wash ashore and impact sensitive areas.

Sections of the barriers over the water are called as freeboard whereas other sections of the barriers under the water are called as drafts and they have to be designed in a manner so as not to be imbalanced on the water due to average current and wind speed. Minimum requirements of barriers are shown in Table 4.34 in accordance with the communiqué no. 2009/6, published by the Ministry of Transport and Infrastructure of the Republic of Turkey. TÜPRAŞ Izmit Refinery is classified as “Shore Facility without Breakwater” according to Table 8.2.2 and freeboard height must be minimum 35 cm., buoyancy - weight ratio must be 4:1 and tensile strength must be 22 kN when selecting the barrier.

Table 8.2.1. Minimum Specifications of Oil Barriers

Minimum Specifications of Oil Barriers		**Freeboard (cm)**	**Draft (cm)**	**Buoyancy/ Weight Ratio**	**Tensile Strength (kN)**
Barriers to be used within breakwater (minimum)	Barriers purchased in and before 2007	15	Cannot be less than freeboard value	4:1	22
	Barriers purchased after 2007	20			
Barriers to be used out of breakwater and at shore facilities without breakwater (minimum)	Barriers purchased in and before 2007	25	Cannot be less than freeboard value	4:1	22
	Barriers purchased after 2007	35			

Barriers must be laid down quickly during the response and initially the source of spillage and the area, at where the spillage is at its height, must be surrounded. So, it will be possible to collect oil from the sea surface more effectively by using oil scrapers.

Oil Scrapers and Pumps

Oil scrapers are mechanical equipment that physically collect the oil from the sea surface. Operating mechanisms of oil scrapers based on principles of collection are summarized below:

Brush Type Oil Scrapers: The spillage is collected from the surface of water by brushes fit on rotating components. Since brushes are oleophilic, they can effectively collect oil from the water surface. Solid particles, collected with oil, are separated from oil by the gears on the scraper. Collected oil is transferred to storage tanks by the pumps. Such type of oil scrapers are effective for high density oils, such as crude oil.

Weir Type Oil Scrapers: The oil is collected within the collection vessel, which is located at the center of scraper, due to concentration difference of oil accumulated on the water surface. In case the spillage is not too much concentrated, such type of scrapers collect significant amount of water together with oil. Therefore they are effective for spillages with medium viscosity.

Spool and Disc Type Oil Scrapers: They are types of discs, the scraper unit of which is composed of spool or disc shaped parts. The oil captured by spool or discs are transferred to oil collection vessel and then pumped to storage tanks. They are effective for collection of spillages with medium viscosity.

Pumps are mechanical equipment used to transfer the oil, which was collected from the sea surface by oil scrapers, to temporary storage tanks or to transfer the oil that has been accumulated within storage tanks to transportation vehicles for disposal purposes. Most frequently used pump types in responding to spillages are centrifugal pumps, diaphragm pumps, screw pumps, and multistage pumps.

Temporary Storage Tanks

Temporary storage tanks are the storage units, at where the oil collected by scrapers are temporarily stored after they are transferred by pumps. Wastes are stored temporarily until final disposal and they are transferred after they have been classified according to their types.

Absorbing Materials

Absorbing Barriers are used to clean areas, such as shores and piers, during the cleaning operations and they are effectively used for recovery purposes. They are also placed on inner section of the barrier surrounding the oil on sea surface in order to increase effectiveness of the barrier and some oil is collected by being absorbed with absorbing barrier.

Absorbing Pads are laid on the surface of oil spillage during the cleaning operations in order for cleaning purposes. They are widely used for cleaning the shore and on the final stage of marine cleaning.

In case of spillages covered by Level 1 as described in Article 7 of the Regulation, Emergency Response Team of TÜPRAŞ Izmit Refinery will take necessary actions. Petroleum spillage response service is being received from ....., an organization authorized by the Ministry of Transport and Infrastructure of The Republic of Turkey, for Refinery Level 2 spillages.

The materials, equipment and vehicles recommended to be kept within the facility for Level 1 operations are placed within a single floor building, named as “Barrier Shelter”, located at the inner section of Phase-2 pier. The lists of equipment, materials and vehicles recommended to be kept within the facility are given in Table 8.2.3 and Table 8.2.4. When determining the length of barrier, it was planned to have at least 3 times longer than the length of largest ship that berths to the pier.

Table 8.2.2. Equipment, Materials and Vehicles Recommended to be Kept Within the Facility Under Level 1

No	Equipment/Material/ Vehicle	Features	Quantity Recommended to be Kept within the Facility
BARRIER AND SHORE PROTECTION			
1	Open Sea Barrier	1.10 m high, fence type barrier (Freeboard:40cm., Draft: 70cm.)	1000 m.
2	Shore Protection Barrier	Shore protection barrier with 5 m. sections	50 m.
3	Anchor Set	Pontoon, anchor, chain and rope in conformity with the oil barrier	10 set

4	Fixed Barrier	Durable barrier that can prevent spread immediate leakages under piers and on platforms and that resists to any weather condition (Freeboard: 35 cm., Draft: 50 cm.)	1,900 m.
SCRAPERS			
5	Disc Type Scraper	Disc type oil scraper with 20m^3/h capacity	1 set
SORBENT MATERIALS			
7	Sorbent Barrier	20 cm x 3m size sorbent barrier	500 m.
8	Sorbent Pad	Square shaped pad in packs of 50	5 bales
STORAGE AND BLOWER UNITS			
9	Portable Tank	15 m^3 capacity With tank primers, ceiling covers and floor mats	1 set
10	Floating Storage Tank	Floating storage tank of 5 m^3 capacity	2 set
WASHERS			
11	Pressurized Washing Machine	Pressurized Washing Machine for Shore Cleaning	1 piece
PROTECTIVE EQUIPMENT / MATERIALS			
12	Personal Protective Equipment	Tyvek Overalls, goggles, gloves, work shoes, hard hat	In sufficient amount for Site Response Team
13	Organic Cleaner	Hand and body cleaner	5 liters
14	Security Signs	Safety tape and security boards	1 set
MISCELLANEOUS			
15	Camera	To identify and prove the spillage	1 piece
16	Gas measurement device	Capable to measure 4 types of gas	1 piece
17	Equipment to be used for shore cleaning	Shovel, Washing brush, etc.	In sufficient amount for Site Response Team
18	Hand cart	To be used for shore cleaning	5 pieces

**Mooring boats of DİTAŞ, which are located within the facility's borders, are used to lay down and pick up the barriers within TÜPRAŞ Izmit Refinery and sewage trucks available within the facility are used to transfer oil from land or marine temporary storage tanks to the waste acceptance facility.*

Table 8.2.3. Equipment, Materials and Vehicles that might be Needed for Level 2 and Level 3

No	Equipment/Material/Vehicle	Features	Quantity Recommended to be Kept within the Facility
BARRIER AND SHORE PROTECTION			
1	Open Sea Barrier	Inflatable barriers, each has a length of 50 m., on a drum (Freeboard: 35 cm., Draft: 40 cm.)	2,900 m.
2	Open Sea Barrier	1.10 m high, fence type barrier (Freeboard:40 cm., Draft: 70cm.)	225 m.
3	Shore Protection Barrier	Shore protection barrier with 5 m. sections	100 m.
4	Anchor Set	Pontoon, anchor, chain and rope in conformity with the oil barrier	40 set
SCRAPERS			
5	Disc Type Scraper	Disc type scraper with 12 m^3/h capacity	1 set
6	Geared Type Scraper	25-30 m^3/hour, geared type scraper	1 set
7	Weir Type Scraper	11 m^3/hour, geared type scraper	1 set
8	Vacuum Type Oil Collection System	24 m^3/hour, vacuum type oil collection system	1 set
PUMPS			
9	Diaphragm Pump	30 m^3/h capacity, 3 inches wide pulling head, together with hose connection parts and filter	1 set
SORBENT MATERIALS			
10	Sorbent Barrier	20 cm x 3m size sorbent barrier	1,200 m
11	Sorbent Pad	Square shaped pad in packs of 50	10 bales
STORAGE UNITS			
12	Portable Tank	With 15 m^3 tank primers, ceiling covers and floor mats	1 set

13	Portable Tank	With 6 m^3 tank primers, ceiling covers and floor mats	3 sets
14	Floating Storage Tank	Floating storage tank of 25 m^3 capacity	1 set
15	Floating Storage Tank	Floating storage tank of 12.5 m^3 capacity	1 set
WASHERS			
16	Pressurized Washing Machine	Pressurized Washing Machine for Shore Cleaning	2 pieces
PROTECTIVE EQUIPMENT / MATERIALS			
17	Personal Protective Equipment	Tyvek Overalls, goggles, gloves, work shoes, hard hat, etc.	In sufficient amount for Site Response Team
18	Eye Washing Unit	Portable	2 sets
19	Citrus Organic Cleaner	For hand and body cleaning	10 liters
20	Security Signs	Safety tape and security boards	2 sets
MISCELLANEOUS			
21	Gas measurement device	Capable to measure 4 types of gas	2 piece
22	Full face mask	Full face mask with H_2S compatible cartridge	5 piece
23	Lighting Pylon	Lighting Pylon - with power generator	1 piece
24	Equipment to be used for shore cleaning	Shovel, Washing brush, etc.	In sufficient amount for Site Response Team
25	Hand cart	To be used for shore cleaning	10 pieces
26	Equipment for Scaring and Protecting Birds and Wild Life	For protection of wild life	1 sets
BOATS			
27	Inflatable boat	With 70 HP engine capacity	1 piece
28	Petroleum Spillage Response Boat	A boat with necessary equipment for responding to petroleum spillage	1 piece
VEHICLES			
29	Forklift	For assisting the movement of materials	1 piece
30	Truck	With the capacity needed to move the materials	1 piece
COMPUTER AND COMMUNICATION			

31	Office Equipment	Equipment, including computer, printer, fax machine, scanner and phone	1 set

** Equipment, materials and vehicles that might be needed for Level 2 and Level 3 as described in Table 8.2.4 will be used in case of a Level 2 and Level 3 spillage and together with the equipment, materials and vehicles recommended to be kept within the facility for Level 1 spillages. In case of Level 2 and Level 3 spillages, the equipment, materials and vehicles of ...., which has undertaken to provide Level 2 Emergency Response Service for TÜPRAŞ Izmit Refinery, will be used.*

8.3 Arrangements regarding the first response to the accidents involving dangerous cargos (First aid procedures, first aid possibilities and capabilities, etc.)

The "Medical First Aid Guide (MFAG)" in the IMDG Code appendix and

Emergency Plans (EmS) in the IMDG Code appendix are used for emergency situations involving dangerous cargoes.

8.3.1. Entity/Organization and/or Person(s) Responsible for Coordination and Management of and Response Under Emergency Response Plan according to Response Level

In case of Level 1 petroleum spillage that might occur at TÜPRAŞ Izmit Refinery, the Emergency Response Team, composed of refinery staff will be assigned to respond. The Emergency Response Team is responsible for coordination, administration and response operations at the refinery in accordance with Risk Assessment and Emergency Response Plan. Details of Operation Team are given in Figure 8.3.1.

In case of spillages covered by Level 1 as described in Article 7 of the Regulation, Emergency Response Team of TÜPRAŞ Izmit Refinery will take necessary actions. Petroleum spillage response service is being received from ....., an organization authorized by the Ministry of Transport and Infrastructure of The Republic of Turkey, for Refinery Level 2 spillages.

Actions to be taken in case of Level 1 spillage, which may cause small scale pollutions and which might occur as a result of operational activities being performed at the refinery or any ship that has berthed to the refinery, are summarized below as per the provisions of the Law No. 5312 on Responses in case of Emergency due to Pollution of Sea and Shores by Petroleum and Other Harmful Substances and Principles for Compensation of Damages:

- The incident is notified to AAKKM (Main Search & Rescue Coordination Center).
- AAKKM notifies other relevant units.
- The level of pollution is determined.
- The responsibility to respond to the pollution does belong to the refinery/ship.
- The response is made in accordance with refinery/ship emergency response plan.
- Refinery operator is responsible for implementation of Emergency Response Plan.

Port Authority and Provincial Directorate of Environment and Urbanization monitor the operations and inform the Ministry of Transport and Infrastructure and the Ministry of Environment, Urbanisation and Climate Change of the Republic of Turkey about the results of operations.

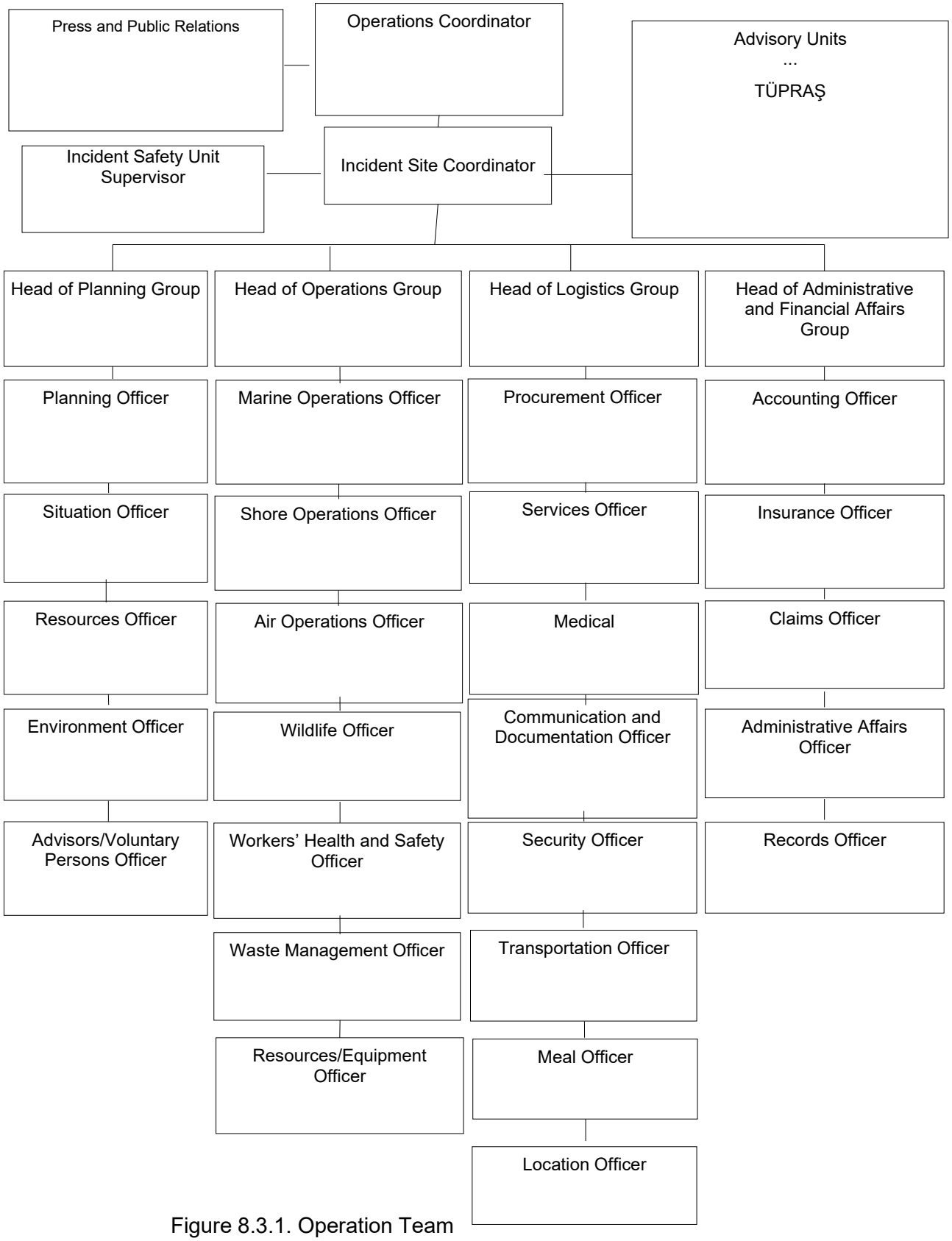


Figure 8.3.1. Operation Team

8.3.2.Possible Coordination System with National Emergency Response Plan or Applicable Regional Emergency Response Plan

National Emergency Response Plan will be applied in case of a Level 3 spillage that might occur at TÜPRAŞ Izmit Refinery. The Ministry of Environment, Urbanisation and Climate Change is responsible for overall coordination according to National Emergency Response Plan. National Coordination Committee will provide technical support and the incident will be managed from National Emergency Response Center.

National Operation Committee is responsible for responding the incident. As it can be seen in Figure 8.3.2, National Operation Committee is composed of National Operations Coordinator, National Incident Site Coordinator and the Ministry of Transport and Infrastructure of the Republic of Turkey as the head of group responsible for response operations on the sea and the Ministry of Environment, Urbanisation and Climate Change of the Republic of Turkey as the head of group responsible for response operations on the shore.

National Emergency Response Center will be the workplace of national coordination committee, which coordinates the nationwide incidents that might occur on land and sea. National Emergency Response Center will be equipped with the equipment, staff and tools to be used for responses. Main Search & Rescue Coordination Center within the Ministry of Transport and Infrastructure of the Republic of Turkey shall be assigned as national emergency response center until National Emergency Response Center is established. For this purpose, Main Search & Rescue Coordination Center is improved to perform both tasks.

The Ministry of Transport and Infrastructure of the Republic of Turkey will create the network of regional emergency response centers, linked to national emergency response center. National Emergency Response Center is a part of the project for establishment of emergency response centers and TÜBİTAK MAM has determined the locations of emergency response centers and stations after evaluating all risk maps, environmental sensitivity maps, and air photos.

In case the spillage that might occur at the refinery is a Level 3 spillage, it will be managed under the responsibility of National Emergency Response Center. Actions to be taken for this purpose are summarized below:

- The incident is notified to AAKKM (Main Search & Rescue Coordination Center).
- AAKKM notifies other relevant units.
- The level of pollution is determined.
- The Ministry of Environment, Urbanisation and Climate Change of the Republic of Turkey is responsible for overall coordination of the response to the pollution.
- A national coordination committee is established under the chairmanship of the Ministry of Environment, Urbanisation and Climate Change of the Republic of Turkey.
- The response is performed in accordance with national emergency response plan.
- The national operations committee is formed and the Ministry of Transport and Infrastructure of the Republic of Turkey or the Ministry of Environment, Urbanisation and Climate Change of the Republic of Turkey assigns the national operations coordinator.
- The response operations are managed from national emergency response center.
- The response operations are performed by incident site coordinator, reporting to national operations committee.
- Operations Coordinator decides to stop the operations.

- A commission is established by the Ministry of Environment, Urbanisation and Climate Change of the Republic of Turkey to determine the damages.
- The Ministry of Transport and Infrastructure of the Republic of Turkey acts as the intermediary for compensation of pollution damages.
- Port Authority and Provincial Directorate of Environment and Urbanization monitor the operations and inform the Ministry of Transport and Infrastructure and the Ministry of Environment, Urbanisation and Climate Change of the Republic of Turkey about the results of operations.

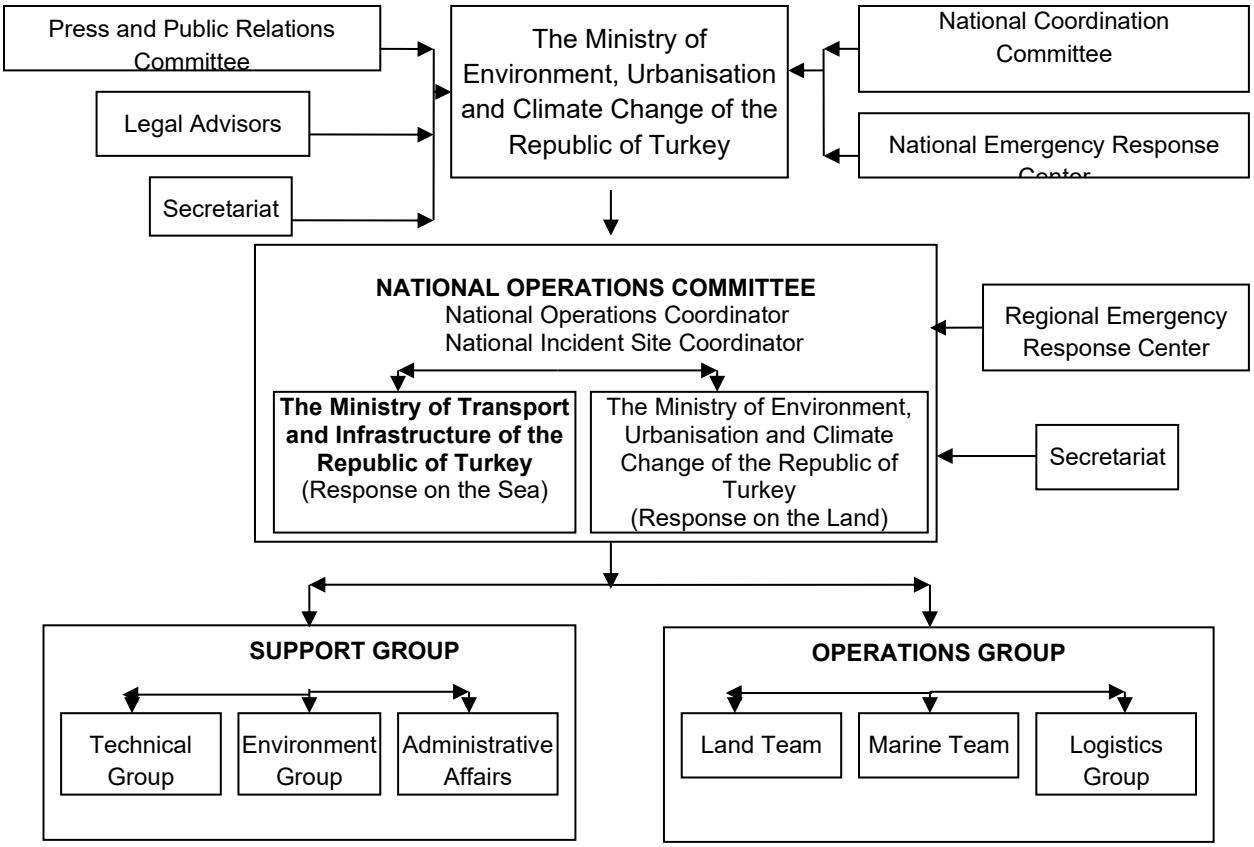


Figure 8.3.2. National Emergency Response Organization Chart

Regional Emergency Response Centers will act as response, operations and coordination centers for implementation of regional emergency response plans on the land and sea in case of Level 2 spillages.

Actions to be taken in case of Level 2 spillage that might occur at the refinery are summarized below:

- The incident is notified to AAKKM (Main Search & Rescue Coordination Center).
- AAKKM notifies other relevant units.
- The level of pollution is determined.
- Governor of the relevant region is responsible for overall coordination of response to the pollution. The governor calls regional coordination committee for a meeting and chairs the meeting.
- The response is performed in accordance with regional emergency response plan.
- Port Authority of the Ministry of Transport and Infrastructure of the Republic of Turkey or Provincial Director of Environment and Urbanization of the Ministry of Environment,

Urbanisation and Climate Change of the Republic of Turkey is the operations coordinator and chairman of operations committee.

- The response operations are managed from regional emergency response center.
- The response operations are performed by incident site coordinator, reporting to regional operations committee (determined by Operations Coordinator).
- The company, named ...., which has undertaken to provide Level 2 Emergency Response Service for TÜPRAŞ Izmit Refinery, will take an active role in Operation and Support Groups.
- Operations Coordinator decides to stop the operations.
- The commission that was formed by the Governor's Office to determine the damages performs necessary works.

Organization chart of regional operations committee for the units that are responsible under regional emergency response plan for a Level 2 incident is given in Figure 8.3.3.

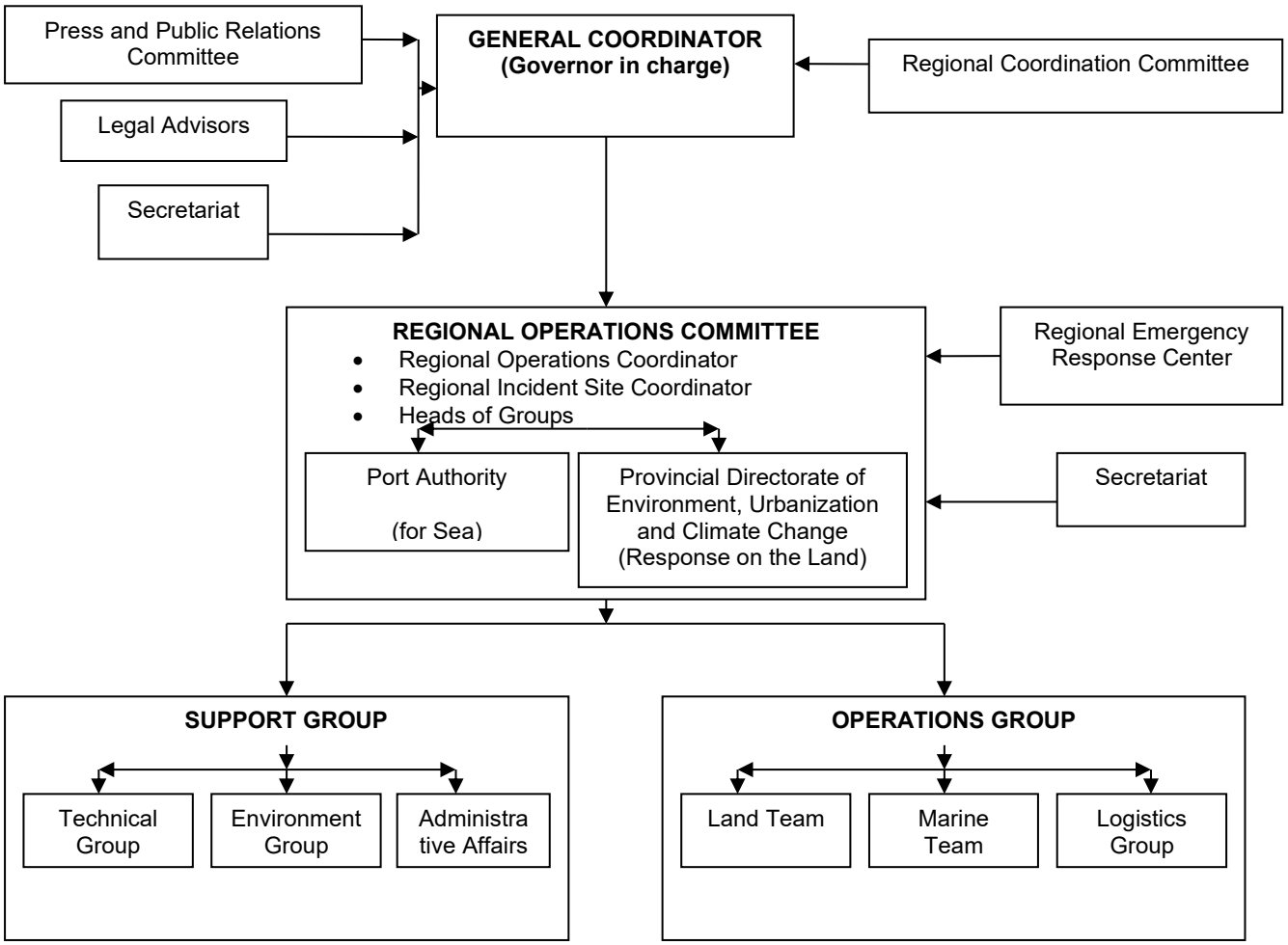


Figure 8.3.3. Regional Emergency Response Organization Chart

8.3.3.Actions to be Taken and Procedures to be Applied in case of Emergency based on Level of Response

As described in Law No. 5312 on Responses in case of Emergency due to Pollution of Sea and Shores by Petroleum and Other Harmful Substances and Principles for Compensation of Damages, Emergency Response Plans are implemented in four stages: notification of incident

response operations, evaluation and activation of plan, response operations, and disposal of wastes and rehabilitation of polluted areas. After these stages are completed, emergency completion actions, which define that emergency response operation has ended and regular operations can begin, are performed.

- Stage 1: Notification
- Stage 2: Evaluation and Activation of Plan
- Stage 3: Response Operations
- Stage 4: Disposal of Wastes and Rehabilitation of Polluted Areas

More than one of these stages can be performed together, depending on current situation. These stages are described as follows:

Stage 1 - Notification:

In case of any spillage that might occur at the facility, Emergency Response Plan will be activated and refinery management, government authorities and neighboring facilities that might be affected are informed. If the incident is changed from Level 1 to Level 2, Operations Coordinator informs the Governor in Charge and other relevant units. If the incident is changed from Level 2 to Level 3, the Governor in Charge informs the Ministry of Environment, Urbanisation and Climate Change of the Republic of Turkey. As a part of these notifications, the relevant units are informed and the level of response is increased. Actions required by current conditions are taken and response operations are resumed accordingly.

Stage 2 - Evaluation and Activation of Plan

After the emergency notification is received, the Operations Coordinator and Incident Site Coordinator, who received the notification, decides to implement the plan, based on the received notification and Emergency Response Plan and implementation stage and activation level of Emergency Response Plan are determined.

Stage 3 - Response Operations:

The staff, who has a role in Emergency Response Plan, starts the operations in accordance with the level of pollution and/or potential pollution projections.

Emergency Response Team begins the first response in case of a Level 1 pollution and waste disposal and rehabilitation works continue under the coordination of response unit.

If the facility’s resources are not sufficient to respond, relevant organizations are notified for implementation of Regional Emergency Response Plan. Notifications are made to National Coordination Center, relevant public entities and organizations and other stakeholders upon obtaining the approval of the Governor in Charge, who is the Chairman of Regional Coordination Center, in order for implementation of National Emergency Response Plan.

Each response operation is managed by relevant coordination center in accordance with applicable emergency response plan.

The main objective of response operations is to stop spillage as soon as possible, to reduce the damage that might be suffered by environment and to complete prevention works as soon as possible. In case of any spillage, initially the notification procedure is applied. According to the notification procedure:

- The person that saw the spillage informs the facility’s central office/security.
- Operation Coordinator or Incident Site Coordinator is informed in accordance with the facility’s emergency response plan.

- Incident Site Coordinator and Operations Coordinator puts the response team on alert and makes necessary preparations, based on the information provided.
- Operations Group arrives the incident site and determines the reason and amount of spillage at first.
- If there is any fire risk, necessary actions are taken.
- Estimated amount of spillage and weather conditions are notified to Incident Control Center.

Operations Coordinator in TÜPRAŞ Izmit Refinery's Emergency Management Center informs, AAKKM (Main Search & Rescue Coordination Center) of the Ministry of Transport and Infrastructure of the Republic of Turkey, Port Authority and Provincial Directorate of Environment and Urbanization.

Incident Site Coordinator evaluates the current situation with heads of groups based on the information provided and determines the response strategy and then the response operations begin.

- If it is decided to clean mechanically in accordance with the response strategy, an oil barrier is laid down to prevent the spread of spillage and surround the oil in a certain area, based on the size of spillage and current weather conditions.
- After the oil barrier is laid down, sorbent barriers that are capable to absorb oil are placed on the inner sections of barrier.
- The oil that was blocked and collected by barriers is collected through skimmers and then transferred to temporary storage tank on the boat.

In addition to mechanical response, there are also alternative response methods, such as in-situ burning or leave alone (cleaning by nature). These methods may either bu applied separately or several or all of them can be applied together. One of the most important issues in selecting the response method is Net Environmental Benefit Analysis (NÇFA). Net Environmental Benefit Analysis evaluates advantages and disadvantages of response method by taking environmental effects of response options into consideration. NÇFA recognizes that cleaning operations may negatively effect the environment, but if its benefit is higher and/or it can prevent other impacts, it might be implemented.

Table 8.3.1. Net Environmental Benefit Analysis

Row	Activity
1	Identifying ecological, socio-economical and cultural resources of the site, based on environmental sensitivity, and prioritizing them.
2	Evaluating all applicable response options and comparing the option of leaving alone with other options in order to determine environmental benefits and disadvantages of all response options.
3	Selecting the response method, which would cause the highest environmental benefit and/or have the lowest adverse effect on important resources.

Stage 4 - Disposal of Wastes and Rehabilitation of Polluted Areas:

Polluted areas must be cleaned and wastes must be disposed after the emergency response operations. Also, contaminated staff, equipment, tools and stuff must be decontaminated. It is very important to prevent secondary contamination during the decontamination.

During the decontamination:

- Location of decontamination process must be determined;
- Equipment needed for decontamination must be determined;
- Appropriate PPE must be selected for the staff that will perform decontamination;
- If there is any different substance, risk assessment must be conducted and appropriate PPE must be used;
- The site must be used so as not to cause any secondary contamination during the decontamination;
- If there is any change in the environmental conditions, risks of decontamination must be assessed again and necessary changes must be applied.

Wastes generated after cleaning must be stored at suitable storage conditions in a manner not to cause secondary contamination and within areas that have been designated specifically for this purpose. These wastes must be shipped for disposal through contracted waste carrier company.

8.3.4. Ending and Analysis of Emergency Response Operations

Response operations are continuously monitored. Weather must be convenient for response operations and Net Environmental Benefit Analysis must be suitable for finishing the operations.

In case of a Level 1 incident, Operations Coordinator takes all parameters into consideration and evaluates the current situation together with Incident Site Coordinator and Heads of Groups. Furthermore, samples are taken from the water and analyzed according to Table 4 of the Regulation on Controlling Water Pollution. Results of these analyses are compared with and evaluated according to initial values of the water in coordination with the Provincial Directorate of Environment and Urbanization. Then, Operations Coordinator decides to finish the response operations as a result of these evaluations in consultation with the Provincial Directorate of Environment and Urbanization and Port Authority.

After the response operations are finished, all used equipment, tools and vehicles must be cleaned. If any of them is going to be returned, they must be returned after they are cleaned. Equipment and staff must certainly be recorded. There must be a specially designated area close to the incident site for decontamination of equipment and staff. All wastes generated in this area must be stored in temporary waste storage site.

Operations Coordinator must analyze and evaluate the response operations together with Site Response Team and relevant parties, depending on the level of incident. Data gathered during the response operations must be analyzed and results must be reported in this evaluation. Evaluations must be used in training the staff and updating the emergency response plan.

8.4. Notifications to be Made Internally and Externally in case of Emergency

If an oil spillage occurs in Tüpraş Izmit Refinery, notifications will be made in three ways:

- Internal notifications
- Notifications to government authorities
- Notifications to neighboring facilities that might affected from the incident

The network of notifications to be made after the spillage is given in Figure 8.4.1.

Internal notifications will be started by the person, who saw oil spillage, within TÜPRAŞ Izmit Refinery. The witness will initially inform the Security or central office of TÜPRAŞ Izmit Refinery, which will then inform relevant authorities.

- Operations Coordinator and/or Incident Site Coordinator is informed in accordance with Internal Calls procedure, described in Figure 8.4.1. Operations Coordinator is the person that must be informed at first within 24 hours after any emergency.
- Operations Coordinator, will then inform
    - Relevant members of TÜPRAŞ Izmit Refinery's management;
    - Particularly AAKKM (Main Search & Rescue Coordination Center) and Port Authority and Provincial Directorate of Environment and Urbanization; and
    - Neighboring facilities that will probably be affected, by completing "Status Report Form" in Figure 8.4.2.

TÜPRAŞ Izmit Refinery's Site Response Team and Operations Team will respond to the incident in a coordinated manner. Operations Coordinator and/or Incident Site Coordinator will evaluate the current situation and determine the response strategies, based on the reports received from the site.

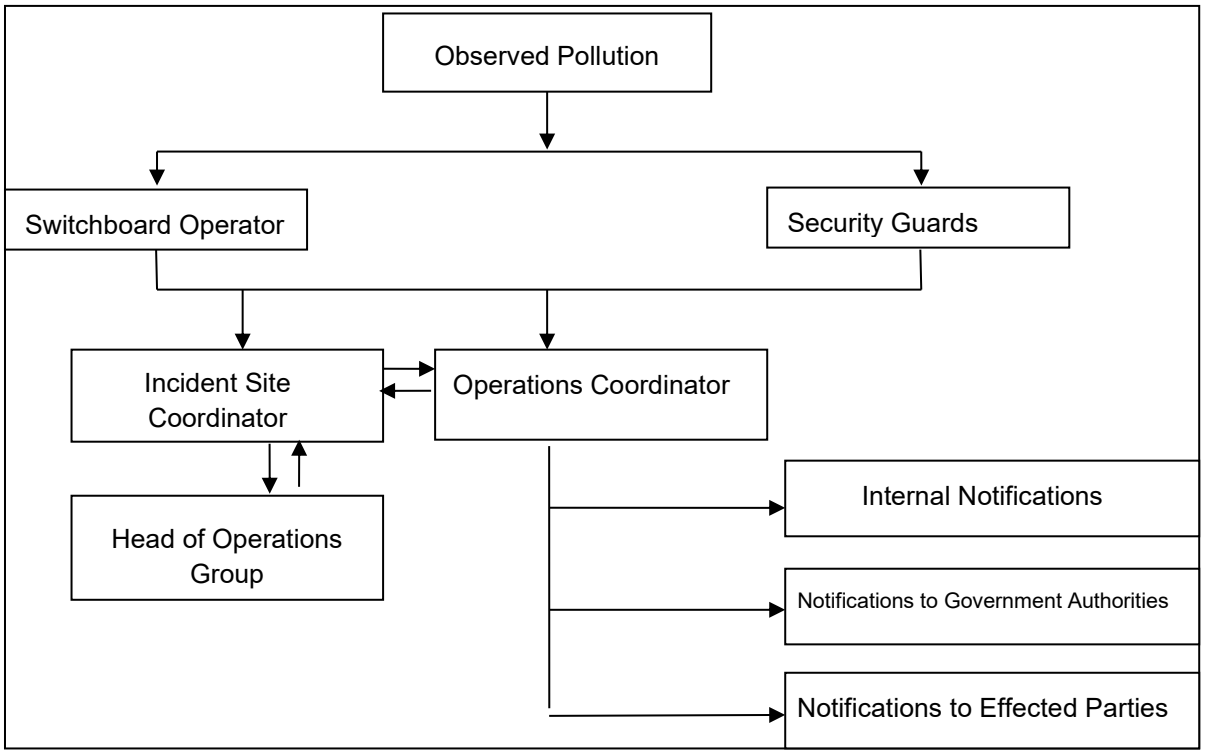


Figure 8.4.1 Notifications and Call Order

8.5. Procedure for Reporting the Accidents

Accidents in our refinery are reported through OSAR (Incident, Classification, Investigation, Reporting) System. Our reporting procedure is explained in details in incident reporting and classification standard.

Incident Reporting and Classification Standard
Objective and Scope

The purpose of this standard is to determine the principles for classifying, investigating and reporting the incidents that occur at work sites of Tüpraş and work accidents that occur during the works performed by contractors on behalf of Tüpraş.

This standard covers the Head Office and all reporting refineries.

Definitions

Incident: An unplanned incident or chain of incidents that might end or has ended with an adverse effect on humans, assets, environment and reputation.

Incidents are classified as follows:

Work Accident

The work accident in relation with employees is the incident that occurs in any of the following situations and physically or mentally affects the insured person in an adverse manner immediately or later.

The accidents that occur under the following conditions are considered as “work accident”:

a) While the staff is located within the workplace;
b) During a work being performed on behalf of the employer;
c) At the time while the staff was not performing his/her main job since he/she was sent by the employer to another place on duty;
d) During the nursing of women employees;
e) Transportation of the staff to the workplace by a vehicle provided by the employer.

Incident Involving Asset Damage

The incidents, which directly damage or cause the loss of enterprise, equipment or materials. When an incident involving an asset’s damage occurs, Osar Reliability Works 5 Reasons Report will be completed. Detailed works on this incident will be performed by Chief Engineers of Operational Reliability.

Environmental Accident Incident

These are unexpected incidents causing the legal limits to be exceeded, which have high potential to damage the ecosystem and natural resources and cause environmental effect out of the facility. Incidents with 3-5 severity in RDT will be considered as Environmental Accident. When an environmental accident occurs, Environmental Accident Incident Report will be completed.

Fire/Explosion Incident

Incidents that require utilization of a firefighting equipment or taking other fire extinguishing measures, such as turning off any fuel and electricity source. Fires, the flame of which cannot be seen, and all combustible or high pressure explosions are included to this group. When a fire/explosion incident occurs, Fire / Explosion Incident Report will be completed.

Ignition/Flashing Situations

Small sized fire and flashing incidents, which can be easily extinguished by the unit. When an ignition and flashing incident occurs, Ignition / Flashing Incident Report will be completed.

Leakage/Spillage Incident

These are the incidents of leakage, spillage and overflowing of substances, such as hydrocarbons, chemicals, etc, which occur in an uncontrolled or unscheduled manner, do not cause any environmental accident or can be partially or completely recovered. The leakage/spillage might be solid, fluid or gas. Incidents with 0-2 severity according to RDT will be considered under this category.

When a Leakage/Spillage incident occurs, Leakage / Spillage Incident Report will be completed.

After the spillage occurs, "Status Report Form", given in Figure 8.5.1, is used to inform the government authorities and neighboring facilities that might be affected from the incident about the current status of incident. After the spillage is responded and cleaning works are completed, Incident Site Coordinator or any person appointed by him/her must prepare a comprehensive report and explain the details of incident and response. This report includes following details:

- Location, date and time of spillage;
- Type and quantity of spillage and affected area;
- Source of spillage and how it has occurred;
- How the notifications were made after the spillage and details of response;
- Detailed information about the impact of spillage on the environment;
- Measures that were taken to prevent spread of spillage and protect the sensitive areas;
- Collecting the spillage and equipment and resources that were used;
- Operations of response team, dates and opinions on the staff;
- Lessons that have been learned and measures to be taken and works to be performed to prevent any spillage in future and to protect the areas that can be affected;
- Summary and date of the report and details of author

. In case of a Level 2 or 3 incident, response and finishing works are analyzed and reported in detail.

Unsafe Situation/Near Miss Incident

Near Miss Incident

Incidents that do not cause any sickness or injury or do not result with any asset damage or adverse effect on the environment or company's reputation. When a Near Miss Incident occurs, Near Miss Incident Report will be completed.

Unsafe Situations

These are the situation caused by conditions that impair the work safety at the workplaces and cause danger in the working environment and they usually arise out of environment, machines, materials and actions of employees that endanger the work safety. In case of unsafe situations, Unsafe Situation Report will be completed.

Minor Response Incident

Incidents that are responded by the company's physicians and do not cause any lost time. When a Minor Response Incident occurs, Minor Response Incident Report will be completed.

First Aid Situations

It covers minor healthcare issues, such as simple treatments and scratches, cuts, burns and prick of chips, which do not require medical treatment by a physician. Such type of treatments

and observations are considered as first aid situation even if they are performed by certified staff or physician.

Medical Treatment Situations

Work related incidents that do not involve any loss of a complete or partial work day but require treatment by a physician or medical expert.

Limited Service Situation

Any work related incident which temporarily prevents the injured person to perform his/her regular job and causes him/her to perform only a part of his/her job on the incident day or on the following days.

Implementation

The implementation will be made in accordance with OSAR Guide Incident Classification, Investigation and Reporting Flow Chart.

Work Accident Report will not be prepared and the incident will not be considered as a work accident in case any work accident is not reported during the staff's working hours.

Reporting the Incidents

When an incident occurs:

- Actual RDT is made and Incident Report is completed by the relevant chief operator / foreman / chief technician / chief officer of the shift, in which the incident occurred.
- Detailed Incident Report is completed by relevant Chief / Supervisor by preparing actual and potential RDT.
- Attached forms in relation with identified Incident Type are completed.

If a work accident occurs as a result of the incident, following process will be applied.

First Responder Application, Work Accident Medical Report

The staff that had an accident will immediately go/be sent to Workplace Doctor for first response. If necessary, an ambulance will be requested from Workplace Healthcare Unit.

Upper section of Work Accident Medical Report will be completed by supervisor (Shift Supervisor in the first and third shifts) of the staff that had the accident and it will be submitted to Workplace Doctor.

In case of a burn, Procedure for Emergency Actions for Burns is applied.

Miscellaneous

Other Provisions

- The unit that issued work permit for works that were performed under a work permit;
- The unit that granted the tender for works that were performed after allocating a certain area.

Relevant departments will receive necessary support from Incident Coordinator (OK) and General Incident Coordinator (GOK), which were formed within TEM/TÇM, for these issues.

STATUS REPORT

FROM: TÜRKİYE PETROL RAFİNERİLERİ A.Ş. IZMİT REFINERY

TO: The Ministry of Environment, Urbanisation and Climate Change of the Republic of Turkey

The Ministry of Transport and Infrastructure of the Republic of Turkey

Main Search, Rescue & Coordination Center

Kocaeli Region Port Authority

1. CURRENT SITUATION

a. Details of Ship or Facility

- Ship's name:
- IMO no.:
- Port and country of flag:
- Ship's type:
- Other details of ship and facility:

b. Status:

c. Reporting Time:

ç. Incident Description:

d. Current Condition of Pollution

e. Current and Forecasted Weather:

2. APPLIED RESPONSES and RESPONSE PLANS:

3. NEEDED RESOURCES and RECOMMENDED MEASURES:

4. TIME OF SUBMISSION OF NEXT STATUS REPORT:

5. OTHER DETAILS:

Signature

TÜRKİYE PETROL RAFİNERİLERİ A.Ş. IZMİT REFINERY

Figure 8.5.1. Status Report Form

8.6 Coordination, support and cooperation method with official authorities

The method of coordination, support and cooperation with official authorities is the same as in the Emergency Action Plan.

8.7 Emergency evacuation plan for the removal of ships and marine vehicles from the shore facility in case of emergency

“İZT.PÜM.PRO.2003 DENİZ DOLUM ÜNİTESİ ACİL DURUMLARDA GEMİLERİ İSKELELERDEN AYIRMA PROSEDÜRÜ” procedure is applied.

• When an emergency occurs, first of all, all ongoing operations at the terminal are stopped, sales valves are closed, hydrocarbon emission sources are reviewed at the ship and terminal, and systems are blocked.
• All maintenance works are stopped at the terminal, the systems that will constitute the ignition source are secured, the maintenance and contractor personnel are taken out of the field, the ships are informed and they are provided to make emergency preparations in their own internal disciplines.

• It is ensured that the tugboat, mooring and mooring boat preparations that will be required for the departure of the ships are made immediately.

• The emergency situation is associated with the ships at the pier and their cargoes, and the priority order is determined for each ship by evaluating the impact of the emergency situation on the ship, facility and refinery.

• The captains of the ships at the pier are informed about the emergency and the loading or unloading processes are stopped and the cargo tanks are requested to be safe.

• The order of the ships to be separated from the pier is determined by the instruction of the unit chiefs. The order of separation is made by evaluating the proximity to the terminal, the shape and size of the emergency, the place where it occurred and its possible effects.

• If the loading arm is connected to the ships to be separated and the arms can be removed, the filling arms are removed according to the separation order of the ships. If the arms are not removable, the emergency disconnect couplings are manually disconnected. If that is not possible, the arms are not intervened and it is expected that the arms will separate themselves when the ship leaves.

• The process of separating the ships starts with the ship closest to the scene, the captains are informed about the order of separation and the preparations to be made, and their opinions are taken.

• The mooring personnel who will use the emergency release hooks on the pier are first transferred to the ship to be separated.

• Tugboats and, if necessary, mooring boats are directed to the side of the ship to be separated, the ship's captain is informed, and the operation channel is determined by establishing radio communication.

• With the approval of the ship's captain, Tugboats approaching the tanker take the ship's bow and stern emergency towing ropes and attach them to their own hooks, proceed to a certain distance and create a safe distance between them and the ship.

• After the ship is towed by the tugboats, the rope hooks to which the ship's ropes are attached are unloaded under the control of the mooring personnel with the instruction of the unit supervisor.

• If necessary, the ships leaving the pier with tugboats are followed up to the anchorage area with the help of tugboats, and the ships are anchored to a safe area to be determined by the port authority.

• Depending on the extent of the emergency, ships that leave the pier and are anchored at the anchorage area are allowed to berth again, provided that the emergency is over, security is restored at the port facility, and then the port authority deems it appropriate.

• The ERC coupling systems on the emergency release hooks and filling arms in the port are periodically checked and maintained, and defective equipment is never used.

8.8. Procedures for Handling and Disposal of Damaged Hazardous Loads and Wastes Infected with Hazardous Loads

8.8.1. Waste Management

Main elements of waste management system is to prevent wastes at source, separate generated wastes at source, recovery of recyclable wastes and so reduce the amount of wastes to be stored, and ensure that wastes, which cannot be recycled, are stored in a manner so as not to cause any harm to environment and public health.

Wastes occurred as a result of petroleum spillage or other accidents must be removed, recycled or disposed in a manner so as not to cause a secondary contamination as soon as possible. Classification of wastes while they are being collected will facilitate this process. Waste transportation and disposal requirements may differ depending on the following factors:

- Petroleum or other hydrocarbon nature (e.g. diesel) of the material being spread
- Location of spread
- Adopted cleaning procedures

In case of a petroleum spillage, it must be ensured that following actions are taken on the incident site:

- Taking all necessary measures to prevent generation of wastes and minimize both the amount of wastes and dangers caused by waste;
- Identifying all generated wastes properly and storing them until they are collected/moved in order to be reused, recovered and recycled and in a manner so as not to cause a secondary contamination;
- Selecting only the contractors with required permissions/licenses;
- Proper transportation, processing and disposal of all wastes;
- All selected disposal facilities must have required permissions and/or licenses and they must also have been designed, constructed and operated in accordance with applicable Turkish legislations.

This section describes the wastes that occur during emergency response operations and the methods for collecting, transporting and finally disposing these wastes.

8.8.2. Reducing the Wastes

Significant amount of wastes occur when controlling and cleaning petroleum spread. Therefore procedures for minimizing the amount of wastes must be applied in order to control the amount of wastes that have occurred. Following type of petroleum substances and wastes may occur as a result of petroleum spread:

- Petroleum (pure or almost pure petroleum)
- Waste with petroleum (sorbents and PPE with petroleum and also liquid mixed with spillage, soil, water or other materials)
- Sediments with petroleum (soil mixed with petroleum)
- Water with petroleum (significant amount of water that contains petroleum and small amount of spillages)

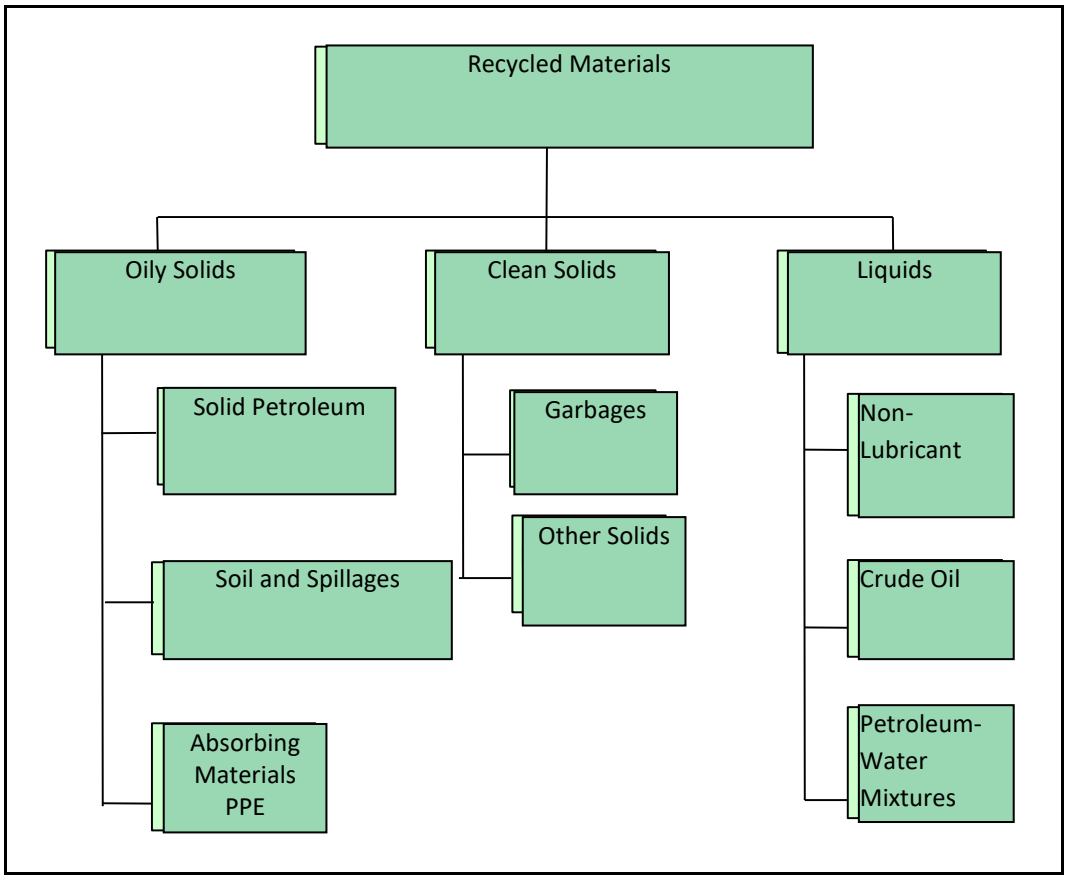


Figure 8.8.1. Wastes that may Occur as a Result of Petroleum Spread

Solid Wastes

Crude oil at TÜPRAŞ Izmit Refinery starts to become gel or solid under yield point and if it is heated sufficiently, its fluidity will increase. Therefore wastes must be stored at leakproof containers or impermeable plastic bags. Oil and sediment mixtures are also included to these wastes. Details given in Table 8.8.1 for solid wastes will minimize the refining method requirements.

Table 8.8.1. Methods to Reduce Solid Wastes

SOLID WASTES
- Potential areas of impact must be identified before the spillage washes ashore. - Impermeability must be ensured with impermeable containers or plastic bags. - Recovered solid petroleum must be separated from sediments with petroleum. - Recycling techniques must be used to reduce the amount of clean soil or sand under the areas coated with petroleum. - Any contact of petroleum, fuel or wastes coated with petroleum with garbages, wastes and substances that are not coated with petroleum must be prevented. - Banquettes and fills must be used to prevent petroleum coated materials contaminate neighboring areas. - Absorbing materials must be used until they completely absorb petroleum in medium or high concentrations. - Used absorbers and PPE must be stored in places separate from other materials. - Reusable or recyclable absorbing products must be separated. - Wastes and Dangerous Cargo that are already available on the site before commencement of any response operation must be reported to relevant authorities and documented properly.

Liquid Wastes

If the petroleum/water mixture is refined as required, most of the water collected can be separated and the amount of recovered petroleum is increased, which reduces logistic problems encountered when disposing large amounts of petroleum/water mixtures. The process of refining and discharging of water is discharging of recovered water from mobile tanks, ship tanks, tank trucks or other containers, which contain petroleum/water mixtures.

These recovered liquids might be in different structures ranging from emulsified crude oil to free water. The process of refining and discharging is performed in accordance with the following criteria, based on the level of free water in the storage tank:

- The process of refining and discharging of water is performed “within the response site” that was selected within the collection zone, in the boat’s collection vessel, in recovery zone, in the set zone or in front of direct recovery system.
- Boats with driving barriers and recovery pumps discharge the water in front of recovery pump.
- Sufficient time is granted for separation of petroleum within internal or mobile tanks before discharging.
- The petroleum within discharged water is visually checked on the discharging area and the petroleum within discharged water is identified.
- Before using an uncleaned vacuumed truck for collecting the petroleum, it is recorded that no contaminant was left to prevent re-discharging of discharged water safely to the environment.

The petroleum that was recovered during the response operations may contain free water or emulsified water. Although it requires different processes, it is mostly possible to separate petroleum and water.

- Non-emulsified petroleum: The petroleum that was collected from seas or rivers is the one that is the easiest to process since usually it is required only to separate petroleum from water. Separation can be performed in the most effective way through gravitation force within collection vehicles, such as vacuumed truck, or within the tank of recovery barge. The process of separation of water is performed by pumping out the liquid or discharging the water at lower layers, as a result of which the petroleum on the surface is left behind.
- Emulsified petroleum: It is harder to remove petroleum from water emulsions within the petroleum. Therefore it is significant to collect petroleum before it is emulsified in order to perform response operations more effectively.

Methods for reducing liquid wastes are given in Table 8.8.2.

Table 8.8.2. Methods to Reduce Liquid Wastes

LIQUID WASTES
- Liquid petroleum must be stored separately - Petroleum must be separated from water through temporary storage tanks or demulsifiers - All fuel and waste storage tanks must be closed to minimize accumulation of rain water - Cleaners and disinfectants must be used carefully - Utilization of wash water must be reduced.

8.8.3. Temporary Storage of Wastes

Wastes that occur as a result of accident vary, depending on the results of land or marine response operations. Therefore these wastes must be minimized and stored temporarily at designated areas after they are properly classified.

Temporary storage areas must be planned and selected carefully. These areas must be close to the area, at where cleaning operations are performed. Areas, at where the staff that took a role in operations and equipment and tools that were used for cleaning operations will be cleaned, must also be close to temporary storage area in order to prevent the spread of pollution to settlement areas. Criteria for establishment of temporary storage areas and actions to be taken during the storage are given in Table 8.8.3.

Table 8.8.3. Criteria for Selection of Storage Areas and Actions to be Taken

Temporary Storage Area	
Storage Capacity	It must be determined according to the amount of wastes that might occur
Environmental Conditions	It must be located safely far away residential areas It must be located far from areas, at where there is a risk for pollution to penetrate underground waters

Temporary Storage Area	
	It must be located out of areas with high environmental sensitivity It must be located far from the effect of wind and waves Culturally and archaeologically sensitive areas must be protected
Transportation	It must be close as much as possible to interim storage, recycling and final disposal areas It must be located at suitable access points of waste transportation vehicles
Ground Structure	Water holding capacity must be suitable Impermeable layer can be natural or artificial
Land Conditions	It must be flat or with steps in order to place storage tanks If there is a slope for rain flow, collecting systems must be established Impermeability must be achieved with plastic primers and it must be surrounded
Hydrogeological Conditions	Underground and surface water systems must be preserved It must not be located within 10 m. from river lands
Measures to be Taken for Temporary Storage	Storage areas must be surrounded and marked with clear stripes and lines, entrances and exits must be bordered and secured If it is inevitable to establish temporary storage areas at locations, at where underground and surface waters do exist, lagoons and channels with drainage systems must be established to ensure that underground and surface waters are not affected from pollution Attention must be paid to ensure that temporary storage units (particularly the wastes collected within plastic bags) are not exposed to direct sunlight Discharging points must be taken under control in terms of surface flow and permeability If there is any recovered spillage, it must be protected from rain water If there is any tendency to flow with the wind, wastes must be covered Storage tanks must be securely fixed to the ground
Temporary Storage at Sea	Wastes must be separated at source Utilization of tanks within the boats can be costly. Therefore it can be

Temporary Storage Area	
	difficult to discharge and clean them after the operations. Tanks on the deck must have been tied securely. Utilization of covers will prevent additional spillages.
Management and Maintenance and Repairing Features	Wastes must be separated and their quantities must be determined Storage and disposal forms must be prepared according to legal requirements Security must be provided to prevent unauthorized discharging of wastes After the wastes are disposed the area must be recovered
Regulatory National Requirements	Law No. 5312 on Responses in case of Emergency due to Pollution of Sea and Shores by Petroleum and Other Harmful Substances and Principles for Compensation of Damages Regulation No. 29314 on Waste Management Regulation No. 25687 on Control of Water Pollution 75/464/AB Regulation on Controlling the Pollution at Water and Surrounding Areas due to Dangerous Cargo

For temporary storage of wastes:

- Separation tanks to be used for separation operations to be performed on the site for liquids
- Open/covered metal containers for liquids and solids
- Plastic tanks with base and cover, used for liquids
- Barges for storage on the water
- Pools surrounded appropriately and prepared by digging a hole on the ground for large spillages are used as special temporary storage units.

The liquid petroleum that is collected after spillage must be stored separately. The petroleum collected from sea surface must be transferred to the tanks on the boats, floating tanks or barges and then collected at temporary storage areas.

If the amount of spillage is too much, ditches with impermeable layers must be prepared at low sensitivity areas for temporary storage of petroleum, collected from the sea surface. Thickness of protective layer and utilization of multiple primers depend on the operation to be performed. If these collection ditches are located at high traffic zones, multiple primers must be preferred. Pits must not be filled too much and the level of liquid must be controlled regularly in order to reduce the risk of overflow in case of heavy rain. These pits must be cleaned after they are used and they must be recovered by being filled with clean soil.

Solid wastes, which must be stored temporarily, are contaminated sand and pebble, deposited petroleum, petroleum coated sorbent materials and personal protective equipment, and cleaning materials, such as barrels and plastic bags. Petroleum coated solid wastes will be stored in impermeable (primed) containers or plastic bags and they will be stored separately on a flat surface in order to be sent for final disposal. This area must initially be coated with heavy plastic primer and it must be surrounded with soil or sand. If the vehicle has to pass through the storage area, plastic primers must be protected with sand or soil surface.

Following requirements must be met when storing the wastes temporarily:

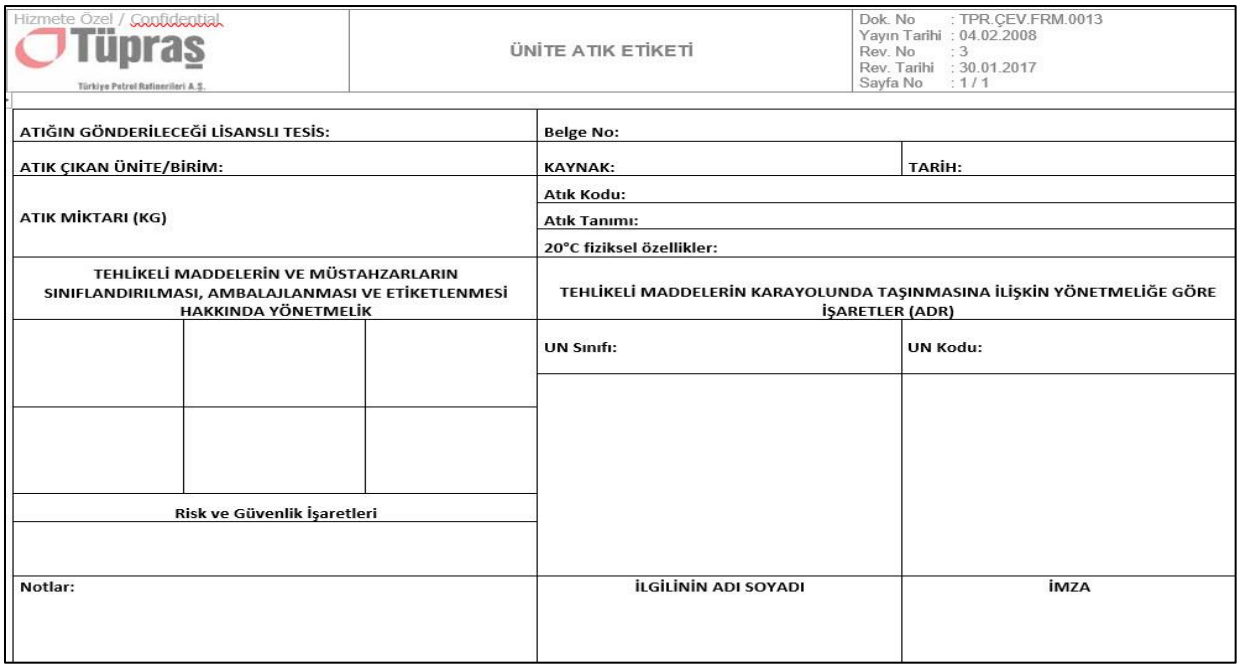
- The security must be ensured at the area and entrance must be restricted;
- The site must be coated with an impermeable material and it must be surrounded to prevent penetration of petroleum to the ground or movement of petroleum to the neighboring areas.
- If necessary, entry and exit areas must be created for the heavy equipment and current condition of the site must not be jeopardized.
- If there is any recovered petroleum, it must be protected from rain water.
- The wastes must be covered if there is tendency to flow with wind.

When the wastes are stored temporarily:

- They must be stored temporarily within containers that conform with internationally recognized standards
- The containers must bear Hazardous Waste sign
- Quantity and storage date of the stored substance must be written on the container
- If containers are damaged, wastes must be transferred to another container with the same specifications
- It must be ensured that containers are always kept closed
- Temporarily stored wastes must be stored separately according to disposal methods and in a manner not to react chemically with each other according to waste code number.

The type of waste must be clearly mentioned on all waste containers. Wastes must be described clearly to allow site staff and external staff to approach safely to wastes. All undefined wastes must be treated as hazardous substance.
When labeling the wastes:

- Name and address of the company of origin of waste;
- Name and signature of the person, who is responsible for environment and waste at the company of origin of waste;
- Name and code number of waste;
- Physical specifications, colour, packaging, type and number of containers of waste as specified in Description Guide of National Waste Transportation Form;
- Hazard identifications mentioned in the list of Specifications of Wastes Considered as Hazardous; and
- Identified risk conditions, combinations and security recommendations must be taken into consideration.



Hizmete Özel / Confidential

Tüpraş
Türkiye Petrol Rafinerileri A.Ş.

ÜNİTE ATIK ETİKETİ

Dok. No : TPR.ÇEV.FRM.0013
Yayın Tarihi : 04.02.2008
Rev. No : 3
Rev. Tarihi : 30.01.2017
Sayfa No : 1 / 1

ATIĞIN GÖNDERİLECEĞİ LİSANSLI TESİS:			Belge No:	
ATIK ÇIKAN ÜNİTE/BİRİM:			KAYNAK:	TARİH:
ATIK MİKTARI (KG)			Atık Kodu:	
			Atık Tanımı:	
			20°C fiziksel özellikler:	
TEHLİKELİ MADDELERİN VE MÜSTAHZARLARIN SINIFLANDIRILMASI, AMBALAJLANMASI VE ETİKETLENMESİ HAKKINDA YÖNETMELİK			TEHLİKELİ MADDELERİN KARAYOLUNDA TAŞINMASINA İLİŞKİN YÖNETMELİĞE GÖRE İŞARETLER (ADR)	
			UN Sınıfı:	UN Kodu:
Risk ve Güvenlik İşaretleri				
Notlar:			İLGİLİNİN ADI SOYADI	İMZA

Figure 8.8.2. Waste Label Sample

There are separate temporary waste storage areas in TÜPRAŞ Izmit Refinery, at where inert, non-hazardous and hazardous wastes, originating from operational activities as well as maintenance and repairing works are stored. Wastes are marked according to their classes and types in Temporary Hazardous Waste Storage Area and they are stored separately. Hazardous wastes are stored within tanks, barrels or small containers according to their classes and attention is paid on conditions to store waste chemicals together. Storage area is large enough to store estimated waste amount and it is designed to prevent spillages and leakages.

TÜPRAŞ Izmit Refinery has Waste Receiving Facility License. Therefore, wastes covered by the license can be received from ships that berthed to the piers. These wastes can be recovered in the refinery or shipped to other disposal facilities, depending on their types. Wastes covered by Marpol 73/78 Annex-I (bilge water, sludge, slope, contaminated ballast and waste oil), ANNEX-IV (waste water) and ANNEX-V (garbage) can also be taken from ships according to Waste Management Plan.
There is a waste management system in conformity with the Regulation on Waste Management in TÜPRAŞ Izmit Refinery.

In case of a Level 1 spillage that might occur at TÜPRAŞ Izmit Refinery, the amount of waste in m^3 that might occur at Site A and the amount of waste in m^3 that might occur at Site B are calculated in Table 8.8.4.

Table 8.8.4. Possible Amount of Wastes that might Occur at Facility

Process	Collected Amount of Waste (m^3)	Remaining Amount of Waste (m^3)
SITE A		
125 m^3 spillage on the sea		
Evaporation (25%)		
Emulsification (increase of volume by 5 times)		
Possible liquid waste that can be collected by responding on the sea (maximum amount that can be collected from the sea is 20%)		
Solid waste collected after responding on the shore when remaining waste washed ashore		
SITE B		
116 m^3 spillage on the sea		
Evaporation (25%)		
Emulsification (increase of volume by 5 times)		
Possible liquid waste that can be collected by responding on the sea (maximum amount that can be collected from the sea is 20%)		
Solid waste collected after responding on the shore when remaining waste washed ashore		

According to IMO data, when man-made shore is polluted with petroleum, the amount of waste that may occur can increase by 5 times. In this case total amount of possible waste that may occur in TÜPRAŞ Izmit Refinery can be calculated as m^3 petroleum-water mixture waste and m^3 solid waste for Site A; m^3 petroleum-water mixture waste and m^3 solid waste for Site B.

Wastes that occur as a result of response operations will initially be stored temporarily and then sent to the disposal facility, with which TÜPRAŞ Izmit Refinery has a contract.

There are waste containers at each pier (Phase-1, Phase-2 and Phase-3 Pier) and at the exit point of sand pier in TÜPRAŞ Izmit Refinery. Wastes that will occur as a result of petroleum spillage response operations in the refinery will be stored temporarily at container points, located at pier exits, in order to be transferred later. These container points are suitable for vehicle traffic and they allow to store the wastes temporarily.

8.8.4. Transfer of Wastes

Wastes must be transferred to disposal facilities after they are separated and appropriately stored during the response. Appropriate transfer of collected wastes is a requirement of waste management.

All activities for transfer of wastes will be managed by Waste Management Officer under the directives of Incident Site Coordinator. National Waste Transfer Form must be used to transfer

wastes from their temporary storage to disposal facilities. Transfer forms will be obtained by Communication and Documentation Officer from relevant Governor's Office. Form D, one of the forms that are completed in 4 copies by the licensed company and Waste Management Officer, is submitted by Communication and Documentation Officer to the relevant Governor's Office before commencement of transfer. All submitted and received transfer forms will be kept at Incident Control Center for three years by Communication and Documentation Officer. Description Guide of National Waste Transfer Form describes how to complete and use these National Waste Transfer Forms.

Wastes, occurred at TÜPRAŞ Izmit Refinery as a result of response operations, to disposal facility are transferred by hazardous waste transfer companies, licensed by the Ministry of Environment, Urbanisation and Climate Change.

8.8.5. Disposal of Wastes

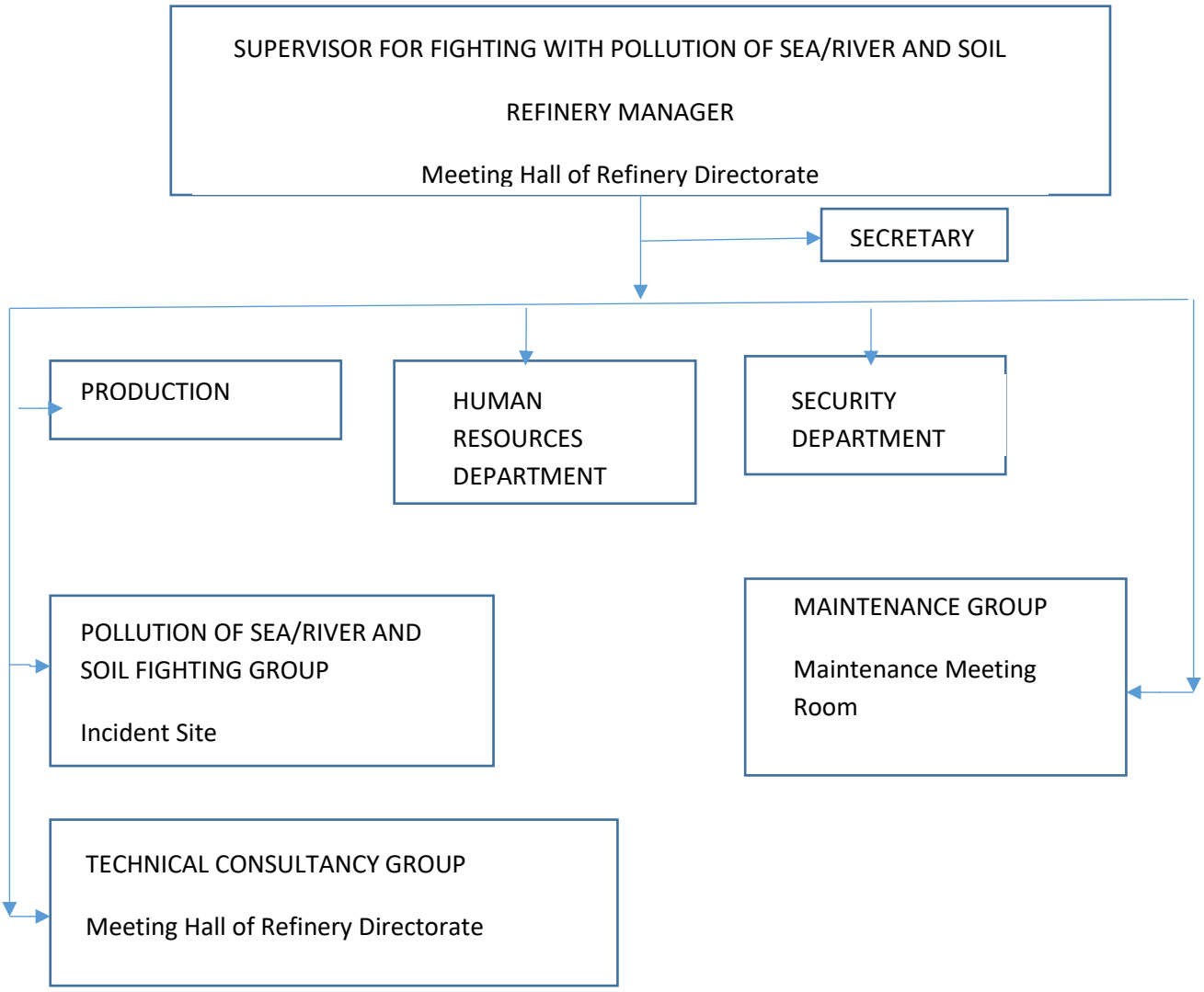
Selection of disposal methods of wastes, which occur after the spillage is responded, depends on the location of spillage, type and amount of spillage and materials contaminated with the spillage, type of recovered waste, legal requirements, and costs.

- *Recovery:* Petroleum or petroleum products can be submitted to refineries or licensed recycling facilities that conform with applicable legislations. There must not be any water, sediment and other foreign substances within the petroleum in order to be recovered. If there is any petroleum sediment within the recovered petroleum, it can be used to build roads. Suitability of material must be determined according to current situation.
- *Burning:* It might be suitable to burn the petroleum or petroleum containing wastes on site, which were disposed particularly in remote locations and in winter. In-situ burning causes atmospheric pollution and generation of a tarlike waste. Industrial waste burning methods can be more suitable. Disposal facilities, licensed by the Ministry of Environment, Urbanisation and Climate Change of the Republic of Turkey will be used for this purpose.
- *Regular Storage (only for solid wastes):* Recovered solid wastes (petroleum or petroleum products) can be disposed through regular storage method. Hazardous wastes that cannot be refined and recovered/recycled and hazardous wastes that cannot be completely eliminated through methods, such as decreasing at the source, recycling, and waste minimization, can be stored at hazardous waste storage fields in a manner not to impair the stability of storage area and not to cause damage to the environment. If it is proven that the measures taken during the storage are sufficient and if the waste passes necessary tests and evaluations and it is proven that environment will not be affected adversely, the hazardous waste can be stored at regular storage facility. Such types of wastes are processed and stored separately from household solid wastes.
- *Separation of Petroleum/Water:* Petroleum and water mixtures are usually separated by benefiting from the density difference. Petroleum/water mixture is kept within suitable tanks to allow them to be separated in two phases due to their density differences. After separation is completed, the layer hanging on the surface is collected by oil scrapers.

Waste waters of washing operations (water separated from separation, waste water from decontamination of staff and equipment, etc.) are collected and disposed separately. In case such collected waste water is going to be discharged to the sea, it must meet the threshold values, given in the Regulation on Controlling the Water Pollution, published in the Official Gazette no. 25687.

Wastes collected in TÜPRAŞ Izmit Refinery are disposed by disposal companies, licensed by and registered to the Ministry of Environment, Urbanisation and Climate Change.

Organization Chart for Fighting with Pollution of Sea / River and Soil and Assigned Positions



8.9. Emergency Exercises and Their Records

All exercises performed in our refinery are recorded. Reports of two of these exercises are given below:

Report of Exercise for Responding to Marine Pollution in July 2023

INTRODUCTION

The schedule of exercises, which must be conducted in every 6 months in accordance with the communiqué, titled “Procedures and Principles of Training Seminars and Exercise Programs for Responding to and Being Ready for Pollution caused by Petroleum and Other Harmful Substances” and no. 2010/4, enacted after being published in the Official Gazette, dated 09.04.2010 and no. 12085, is prepared by taking the risk assessment and the incidents, which require Level 1 response, into consideration.

The exercise is performed in 4 phases between 10:00 and 11:03 on July 5, 2023. Phases of the exercise are On-the-Desk exercise, Notification exercise, Responding to pollution, and Damage and compensation. The exercise is concluded with exercise briefing, which was organized to show the results.

This report analyzes the exercise scenario and problems encountered during implementation of the scenario and it is aimed to improve the measures based on opinions and suggestions.

EXERCISE SCENARIO: While the crude oil discharge was continuing at the platform jetty, a leak occurred in the ship's flanges due to high pressure in the lines due to a malfunction in the closing direction of the ball valves on the filling arms. The leakage overflowed from the deck of the ship, causing a spill of approximately 5 m^3 of crude oil in the sea. After the event, the transfer was stopped and the flow was interrupted.

IMPLEMENTATION OF EXERCISE SCENARIO

PREPARATIONS BEFORE EXERCISE: Exercise scenario was prepared in advance and exercise site was examined by authorized representatives of Production, Security, and Technical Safety and Environment Departments. Actions to be taken by the staff of marine loading, technical safety and environment and maintenance departments for the initial response to be made by the unit’s staff are discussed. Additionally, locations of equipment, barriers to be laid down, skimmers to be used, marine storage tank, etc. are examined in order to ensure that pollution site is responded effectively.

Based on the preliminary evaluation, it is decided that

a) Marine loading unit’s staff will start working to stop filling operations for the tugboat when the leakage begins after the radio announcement.
b) The teams for responding to marine pollution will use the fence barrier, located on PHASE-I boat pier’s platform, and the inflatable barrier located within the barrier shelter,

c) After barrier is laid down, cleaning works will begin with skimmer within fence barrier by using boat
d) Effectiveness of cleaning works being performed on the sea will be checked and the exercise will be completed.

MARINE POLLUTION EXERCISE BRIEFING:

A briefing is made for the exercise after Marine Pollution Exercise is completed. TÇM Chief, explained the requirement to conduct the exercise and Marine Loading Unit Supervisor, explained the scenario of exercise and operations in summary. Additionally, the questions asked by participants are answered and deficiencies and improvements to be made are discussed. The film that was taken during the exercise is watched at the last part of the briefing.

Report of Exercise for Responding to Marine Pollution in November 2023

INTRODUCTION

The schedule of exercises, which must be conducted in every 6 months in accordance with the communiqué, titled “Procedures and Principles of Training Seminars and Exercise Programs for Responding to and Being Ready for Pollution caused by Petroleum and Other Harmful Substances” and no. 2010/4, enacted after being published in the Official Gazette, dated 09.04.2010 and no. 12085, is prepared by taking the risk assessment and the incidents, which require Level 1 response, into consideration.

The exercise is performed in 4 phases between 10:00 and 11:30 on November 2023. Phases of the exercise are On-the-Desk exercise, Notification exercise, Responding to pollution, and Damage and compensation. The exercise is concluded with exercise briefing, which was organized to show the results.

This report analyzes the exercise scenario and problems encountered during implementation of the scenario and it is aimed to improve the measures based on opinions and suggestions.

EXERCISE SCENARIO

Before the naphtha discharge at TÜPRAŞ Phase-1 D jetty, as a result of the pier limit naphtha valve remaining closed, a leak occurred at the ship's flanges due to high pressure in the lines when the discharge started. The leakage overflowed from the deck of the ship, causing a spill of approximately 5 m^3 of naphtha in the sea. After the event, the transfer was stopped and the flow was interrupted.

PREPARATIONS BEFORE EXERCISE

Exercise scenario was prepared in advance and exercise site was examined by authorized representatives of Production, Security, and Technical Safety and Environment Departments. Actions to be taken by the staff of marine loading, technical safety and environment and maintenance departments for the initial response to be made by the unit’s staff are discussed. Additionally, locations of equipment, barriers to be laid down, skimmers to be used, marine storage tank, etc. are examined in order to ensure that pollution site is responded effectively.

According to the preliminary evaluation:

-Marine loading unit's staff will start working to stop filling operations for the tanker when the leakage begins after the radio announcement .

-The teams for responding to marine pollution will use the fence barrier, located on PHASE-2 jetty, and the inflatable barrier located within the barrier shelter,

-After barrier is laid down, cleaning works will begin with skimmer within fence barrier by using boat.

-Effectiveness of cleaning works being performed on the sea will be checked and the exercise will be completed.

MARINE POLLUTION EXERCISE BRIEFING

A briefing is made for the exercise after Marine Pollution Exercise is completed. TÇM Chief, explained the requirement to conduct the exercise and Marine Loading Unit Supervisor, explained the scenario of exercise and operations in summary. Additionally, the questions asked by participants are answered and deficiencies and improvements to be made are discussed. The film that was taken during the exercise is watched at the last part of the briefing. All exercises performed in our refinery are recorded.

8.10 Information on fire protection systems

Firefighting systems available on piers and their operation instructions are given below:

If a fire outbreaks, initially one of electrical and water turbine foam pumps (firstly the foam pump with electrical engine), located within foam center, must be operated with the help of an operator. Then, water/foam monitor that is the closest to the fire site must be operated to begin fighting with the fire. Furthermore, any deposit fire that may outbreak on the sea can be responded with the sprinkler system installed under the pier.

The foam center in each pier is designed at a capacity to allow responding with 3 foam monitors simultaneously. The number of monitors for responding with water depends on the capacity of pumps that are feeding the fire circuit. A foam tank of 7500 liters capacity can serve approximately for 30 minutes in an operation being performed with 3 monitors.

Firefighting Standard

PURPOSE and SCOPE

The purpose of this standard is to determine the types of possible fires in the refineries and the methods to fight with them, tasks of groups and persons that will fight with fire, and the authorities and responsibilities for notifying fire and preparing fire report.

This standard covers all workplaces and operational sites of Tüpraş and administrative buildings, social facilities and task houses of Head Office and Refineries.

DEFINITIONS

Emergency Management Center (ADYM)	The place with appropriate size, equipped with necessary and sufficient amount of documents, plans, standards, maps, sketches, materials and communication equipment in order to manage, direct

	and control emergency(ies) and to ensure collaboration and coordination with relevant persons and companies.
Facility	Operational sites, administrative buildings, social facilities and task houses of Tüpraş's Refineries.
First Level Firefighting Team	The team that responds to fire in accordance with the instructions of Fire Supervisor in compliance with predetermined firefighting strategy.

IMPLEMENTATION

First Response to Fire and Making the Fire Call

- Fire call number is 8888 in Tüpraş's facilities.
- There are landline phones at certain locations throughout the refinery in order for communication in case of emergency.
- Emergency phone calls are written on these landline phones within the facility.
- If person(s) that saw the fire first can extinguish the fire with existing facilities (portable fire extinguisher, fire protection water hose) without risking himself/herself, the fire is responded and if it is understood that this response is or will be insufficient with existing facilities at the fire site, a call is made regarding the fire.
- If the fire is extinguished with the first response, the burned product, fire site, how it is extinguished and other additional details are explained to site officers and Technical Safety Staff as soon as the fire is extinguished.

Making the Fire Call

- Fire calls are made by calling "8888" Fire Call hotline from the closest landline phone or by announcing through joint radio channel.
- At least following details must be provided during the fire call:
  - Name, surname and task of the calling person;
  - Location of fire;
  - If known, details of burned product and equipment, whether there is any poisonous gas in the environment or not (H2S, etc.).

    For example: I'm ……..…… (please tell your name and surname), there is fire at …… (location of fire, name of tank, unit, building and equipment and, if known type of burning product/material).*
- The notification is repeated by the Security Staff that received the call in order to prevent any misunderstanding and both parties mutually confirm that the notification is understood.

- After the fire call, the person immediately returns to the fire site and assists in fire extinguishing works.
- The Security Staff that received the fire call records name and surname of the calling person, location of fire, time of call and alert to “Fire Call Record Book”.

Fire call is checked as described below:

- There are fire call phones that have parallel connection with each other in RGM, TÇM and Laboratory of Refineries.
- Technical Safety Chief Engineer calls fire call hotline “8888” everyday in order to control that fire call hotline is active and prepares monthly phone list so as to cover contractor offices/living quarters and submits it to relevant unit supervisors. Fire call hotline is tested by calling the number everyday according to the list and these daily controls are tracked and recorded through “TPR.TEM.FRM.0128 Fire Call Hotline Monthly Control Form”.Fire Alarm Siren
- Fire alarm siren is sounded by RGM staff that received the call.
- Alarm sirens in the refinery and lodgement sites shall be sounded together during nonbusiness hours and on holidays. (There might be different practices in the refineries within business hours, based on the location of Social Facilities.)
- Fire Alarm Siren: It is in the form of a fluctuating (increasing - decreasing) sound, which will be activated twice for 30 seconds each in every 30 seconds.
- Refinery’s Security Staff that sounded the Fire Alarm siren introduces himself/herself on the central radio channel and tells the location of fire.
- Refinery’s Security Staff that learned the fire with the fire call tells the location of fire to other gates via radio or phone. Refinery’s Security Staff at the gates write the location of fire on “LOCATION OF FIRE” boards, placed on entrance and exit gates, legibly and in capital letters and opens entrance or exit gates.
- If alarm sirens are not sounded for any reason, he/she uses other communication means (radio, phone, megaphone, ambulance siren, etc.).
- When the fire is extinguished, “Fire is extinguished” announcement shall be made through the central radio channel upon instruction of Headquarters Supervisor. Refinery’s Security Staff that heard the announcement shall sound “Fire is Extinguished” siren.
- Fire is Extinguished Siren: Straight sound for 10 seconds to be sounded for once.

Fire Alarm Sirens are tested on the times as stated below:

- Sirens at the Refinery sites are sounded straight for 30 seconds at 8 am and 5 pm everyday.
- Sirens at Social Facilities are sounded straight for 30 seconds at 6.30 pm every Monday.
- “Fire Alarm Siren” and “Fire is Extinguished” siren are sounded in each fire drill.
- All failures in fire call phones and sirens are notified by Refinery Security Department to Maintenance/Engineering Department in order to ensure that they are repaired as soon

as possible and it is also ensured that these phone lines and sirens are always kept functional.

- Each refinery may change testing time, based on its location.

Table 8.10.1. Table of Supervisor Vests of Emergency Response Team

Letter on Vest	Vest Color	Font Color
Senior Supervisor	White	Red
Operations Supervisor	Yellow	Orange
Fire Supervisor	Red	White
Hose Teams Supervisor	Blue	White
RAK Team Supervisor	Green	Gray
Despatcher	Orange	Gray
Traffic Organizer	Yellow	Gray

- There shall be reflective strips and the letters in specified colors and with reflective features, which indicate the relevant supervisor.

Emergency Management Center

When a fire outbreaks, Emergency Management Center (ADYM) is opened and operates in accordance with ADYM Standard, TPR.TGM.STD.0023.

If required and depending on the size of fire and agreed responding strategy, the refinery's staff, who are not at the refinery at that time and who are assigned to units as stated in Firefighting Organizational Chart, are called to duty by authorized representatives of ADYM upon a request of Headquarters Supervisor.

Authorized representatives of Emergency Management Center (ADYM) contact with Headquarters Supervisor to receive information about responding to the incident.

Headquarters

The place, through which the teams that will respond to the fire will be directed, the support needed to respond to emergency is provided and Emergency Management Center is communicated.

Representatives of units and all staff in the headquarters act in accordance with their duties and responsibilities stated in this standard.

- Organization of Headquarters is given in Firefighting Organization Chart.
- Managers of Technical Units stated in the organizational chart provides consultancy to the Headquarters Supervisor regarding the areas under their responsibility.

- Headquarters is located on a safe place by taking the growth of fire, toxic gas spreading hazards and direction of wind into consideration.
- The Headquarters Supervisor determines the location of headquarters by consulting to senior supervisor.
- After its location is determined, “Headquarters Sign” is taken by despatcher from fire brigade vehicle and placed on the location of headquarters.

Headquarters Supervisor and his/her Duties

Headquarters Supervisor is the relevant site manager. If he/she is not available the tasks of supervisor are performed in accordance with the list, given in the organizational chart.

- He/she manages the Senior Supervisor, Despatcher, Traffic Organizer, First Aid Supervisor, Fire Site Security Supervisor and Supporting Teams together with the Managers of Technical Units that provide consultancy services to him/her.
- He/she ensures coordination with ADYM regarding intervening to incident site and requirements.

Senior Supervisor and his/her Duties

Senior Supervisor is the Superintendent/Coordinator of relevant site. If he/she is not available the tasks of supervisor are performed in accordance with the list, given in the organizational chart.

- He/she determines the strategy to respond to the emergency together with Operations Supervisor, Fire Supervisor and RAK Team Supervisor that are reporting to him/her and he/she manages fire, rescue and unit operations.
- He/she ensures coordination with Headquarters Supervisor regarding intervening to incident site and requirements.
- He/she wears the white vest, on which it is written “Senior Supervisor”.
- He/she requests materials, staff, tools and equipment, which might be needed in accordance with the strategy to respond to emergency, from Headquarters Supervisor.

Operations Supervisor and his/her Duties

Operations Supervisor is the relevant Unit/Site Chief. If he/she is not available the tasks of supervisor are performed in accordance with the list, given in the organizational chart.

- He/she manages the unit’s operations together with the unit/site staff reporting to him/her.
- He/she ensures coordination with Senior Supervisor regarding operational responding requirements.
- He/she is responsible to operate, halt and protect the unit/site from fire in acordance with the directives of Senior Supervisor.

- He/she wears the yellow vest, on which it is written “Operations Supervisor”.

Fire Supervisor and his/her Duties

Fire Supervisor is Technical Safety Superintendent. If he/she is not available the tasks of supervisor are performed in accordance with the list, given in the organizational chart.

- He/she manages the operations for responding the fire together with the staff reporting to him/her.
- He/she ensures coordination with Operations Supervisor regarding operational responding requirements.
- He/she manages the hose teams and firefighting staff in accordance with the directives of Senior Supervisor and determined firefighting strategy.
- He/she wears the red vest, on which it is written “Fire Supervisor”.

Duties of Workers’ Health and Safety (WHS) Superintendent

- He/she directs Workers’ Health and Safety staff to the site to be measured in order to conduct gas measurements at the incident site and informs Fire Supervisor about current condition.
- He/she identifies necessary safe zones and ensures that zones, which must not be entered, are barricaded.
- He/she provides the support of WHS staff for First Level Firefighting Team.

Supervisor of Hose Teams and his/her Duties

Supervisor of Hose Teams is either Maintenance Superintendent/Chief/Engineer, responsible for the relevant unit/site, who will be assigned by Maintenance/Engineering Manager.

- He/she ensures that the staff of Maintenance Department and KSM, who will form the hose teams, are ready at the headquarters with their firefighting equipment.
- He/she manages replacement of firefighting team in accordance with directives of Fire Supervisor.
- He/she is responsible for cleaning and collecting the firefighting eqipment together with firefighting staff after the fire is extinguished.
- He/she wears the blue vest, on which it is written “Supervisor of Hose Teams”.

First Level Firefighting Team

First Level Firefighting Team performs the operations to respond the fire in accordance with the instructions of Fire Supervisor in compliance with predetermined firefighting strategy.

Refinery Search & Rescue (RAK) Team Supervisor

RAK Team Supervisor is the staff, selected by Refinery Security Department.

He/she manages RAK Team in accordance with the instructions to be given by Senior Supervisor and the determined rescue strategy. He/she manages the actions of RAK team in accordance with TPR.TGM.STD.0135 Search & Rescue Standard.

Dispatcher and his/her Duties

Dispatchers, … Chiefs and Engineers.

One staff is assigned for each of Headquarters Supervisor, Senior Supervisor, Operations Supervisor, Fire Supervisor and RAK Team Supervisor.

- They are responsible for delivering the information and instructions to be given by Senior Supervisor, Operations Supervisor, Fire Supervisor and RAK Team Supervisor accurately to relevant addressees.
- Dispatchers wear the vests available in fire brigade vehicle, on which it is written “DESPATCHER” and they take the sign of Headquarters from the fire vehicle and place it on the site to be selected by Headquarters Supervisor.
- Vests of supervisors are taken by dispatchers from fire brigade vehicle and delivered to the applicable supervisor.
- In case the radio communication has any problem, they take megaphones of supervisors from the fire brigade vehicle and carry them for supervisors as long as the fire is being responded.

Traffic Organizer and his/her Duties

… Manager assigns enough number of staff as traffic organizer in accordance with the directives of Headquarters Supervisor in order to take entrances to fire site and firefighting site under control.

Traffic Organizers are Chiefs / Engineers / Technicians of ....

- Locations, at which a traffic organizer shall be assigned, are determined in accordance with the results of gas measurements to be conducted by Workers’ Health and Safety (WHS) Superintendent / Chief / Engineer and the routes to responding site and Headquarters Supervisor is asked to assign traffic organizers.
- Traffic organizers wear yellow colored vests, available in their vehicles or fire brigade vehicle, on which it is written “TRAFFIC ORGANIZER” and they stay at their posts.
- Traffic organizers are responsible to manage the traffic at the fire site, to show parking area for arriving vehicles and to keep the roads at the fire site always open.

First Aid Team Supervisor

First Aid Team Supervisor is the Workplace Physician on duty. If he/she is not available the tasks of supervisor are performed in accordance with the list, given in the organizational chart.

- He/she is positioned at a safe zone on the incident site with the ambulance and manages first aid and healthcare operations.

Fire Site Security Supervisor and his/her Duties

Fire Site Security Supervisor is the Refinery's Security Supervisor. If he/she is not available the tasks of supervisor are performed in accordance with the list, given in the organizational chart.

- He/she ensures security at the site and in the refinery by reporting to Headquarters Supervisor.

Support Team

The staff listed in Firefighting Organizational Chart (Annex-9) stays at the headquarters as support team.

- They join and support the firefighting team based on their duties and area of responsibility.

Fire Investigation Report

A Fire Investigation Report (TPR.TEM.FRM.0011) is prepared for all fires occurred within Tüpraş's facilities.

The fire investigation report is prepared and signed by the staff of Technical Safety Department after investigating the incident site together with relevant site officer. After the report is signed, it is submitted to relevant unit supervisors of the refinery and Technical Safety Department in Head Office via e-mail. Fire Investigation Report is archived in TÇM.

Fire Investigation Report is uploaded to Incident Investigation System by relevant superintendent/coordinator of the site.

GENERAL FIREFIGHTING RULES

- It is FORBIDDEN to park vehicles and stack materials in front of of in a manner to obstruct utilization of fire hydrants and emergency responding equipment within Tüpraş's facilities. Emergency responding vehicle must always be accessible and ready to use.
- When fire alarm is sounded all staff must move to their assignment locations as stated in this standard. Contractors, visitors and interns stop to work in a safely manner and move to Assembly Points.
- If sirens of firefighting and emergency responding vehicles (fire brigade, ambulance, RAK Team's vehicle, etc.) are sounding, these vehicles have the priority to pass.

- All staff must know the location of and how to use firefighting equipment at their site/building and if they see any empty or malfunctioning fire extinguishing equipment, they must inform Technical Safety and Environment Department (TÇM) to ensure that they are refilled/repaired.
- All staff must know the locations of underground channels and storm drains as well as their entrances and ventilation locations of storm drains. Gaskets of vents, storm drain covers and field drain systems must be checked, choked vents must be cleaned and damaged drain covers and gaskets must be repaired.
- All staff must know the locations of fire hydrants and circuit breaker valves at their sites.
- Any staff, who is not assigned for firefighting, must act in a manner so as not to obstruct vehicle traffic, stay away from the fire site and must not use their radios and phones unless necessary during the fire.

Measures

Precautions on Electricity Installation

- Devices, that cannot be served by the electricity installation due to its design capacity, must not be used.
- Electricity cables that lost their integrity (extended, damaged isolation, etc.) and have not been controlled shall not be used.
- Maintenance, repairing and controls of electrical and electronic devices shall be made by trained and qualified staff and unauthorized persons shall not intervene.
- Plugs of electrical devices, which were not designed to be left on the socket, shall not be left on the socket after they were used.

Precautions to be Taken in Offices

- Flammable and combustible materials, such as gasoline, spirit, gasoil and fuel oil shall not be used in offices.
- Employees shall close, if open, the windows, check the fire office for fire and safety, and switch off the lights before they leave the office at the end of business hours.

Other Precautions to be Taken

- Matches, lighters, etc. shall never be kept and used for any reason when supplying fuel and checking the lubricants of motorized vehicles.
- There shall not be any good or combustible and flammable material on the roof other than those required for protection from fire. It is not allowed to climb to, smoke at and use fire causing equipment at the roofs.
- Fire Call and Responding Instructions (Annex-2), prepared for refineries, are kept at places visible to all staff within the building and it that they are kept updated by TÇM Departments.

- The instructions to use fire extinguishing equipment within buildings are hung on same places.
- Plans that show emergency exit doors and fire extinguishing equipment shall be hung on appropriate locations of the halls of administrative buildings within Head Office and Refinery Departments.
- Combustible, flammable and explosive materials shall not be kept at places, such as boiler room, tea house, etc.

General Information on Fire

Burning is a chemical reaction resulting from combination of combustible materials with oxygen in certain ratios under heat.

Following elements must combine together in order to start fire:

1. Fuel :Combustible and flammable materials
2. Oxygen:The natural element that forms 21% of atmosphere
3. Ignition Source:The source that starts burning
4. Chemical Chain Reaction :The reaction that causes the fire to continue.

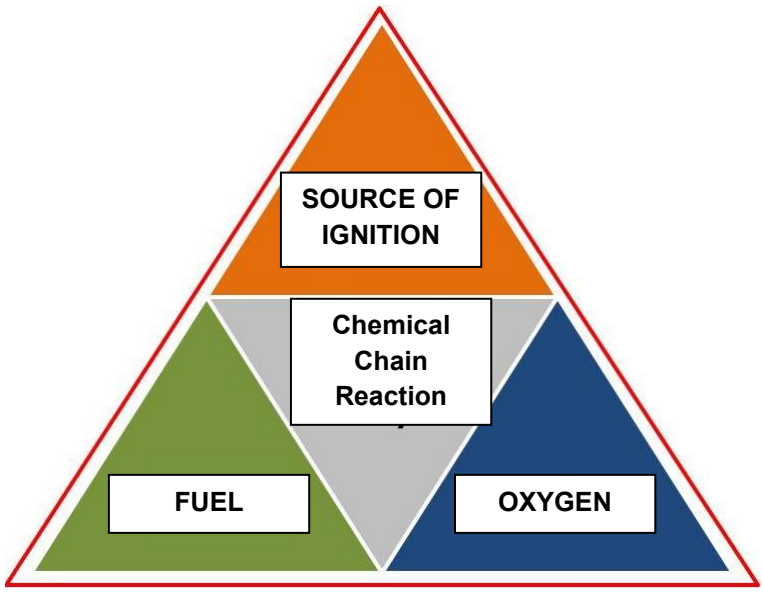


Figure 8.10.1 Triangle of burning

It is explained with the state of burning, triangle of burning. A fire does not occur if any of above does not exist. The combustible material and ignition source or oxygen must be kept away from each other in order to prevent fire. It is also needed to eliminate one or two of these elements in order to prevent or distinguish fire. The safety against fire is based on this principle.

Reasons of Fire

General reasons of fire:

- Failure to comply with bylaws, regulations and circulars on protection from fire;
- Lack of knowledge and training in protection from and extinguishing fire;
- Negligence, lack of measures, carelessness and intentional actions of staff;
- Sabotage;
- Accidents and fires with external origin;
- Natural disasters;
- Nonconformity of electricity and heating standards of facilities with standards, insufficiency of fire protection water systems, failure to know and comply with utilization instructions of firefighting equipment.

Fire Classes

Class A Fire

Fires of solid materials with organic origin. These materials do usually have organic structures with carbon compounds and glows and ashes emerge after they burn (wood, coal, paper, grass, cellulose, rubber, textile products, plastics, etc.).

Particularly multi-purpose dry chemical powdered or aquatic extinguishing equipment are kept at places, where Class A fires may outbreak.

Class A fires are extinguished by cooling the fire down with cooling materials, such as water. However, if the reason of Class A fire is electricity, water is not used to extinguish fire unless it is certainly known that electricity current is broken.

Particularly plastic materials cause highly poisonous smoke when they are burned, appropriate precautions must be taken and masks with fresh air cylinder must be used when responding the fire.

Class B Fire

Fires with fluid flammables. They are classified into two: those mixing with water and not mixing with water.

1. Not mixing with water: Gasoline, benzole, fuel oil, asphalt, mineral oils and cooking oils, etc.
2. Mixing with water: Varnish, paint, thinner, alcohol, paraffin, acetone, glue, etc.

Particularly dry chemical powdered or foam extinguishers are kept at places, where Class B fires may outbreak.

Class B fires are extinguished by blocking the contact of burning material with oxygen. They can be extinguished through cooling (water mist) and suffocating (carbondioxide, foam and dry chemical powder). Large amounts of gasoline and alcohols cannot be extinguished with water mist. Alcohol-resistant special foam must be used for alcohol.

Combustible and flammable fluids are defined and classified as follows:

a) Combustible fluids are those fluids, whose flash point is equal to or higher than 37.8 °C. Combustible fluids are divided into following subclasses:

   1) Class II fluids: Fluids with flash points equal to and higher than 37.8 °C and lower than 60 °C.

   2) Class IIIA fluids: Fluids with flash points equal to and higher than 60 °C and lower than 93 °C.

   3) Class IIIB fluids: Fluids with flash points equal to and higher than 93 °C.

b) Flammable fluid (Class I): Fluids, whose flash point is equal less than 37.8 °C and whose vapor pressure at 37.8 °C does not exceed 276 kPa are accepted as flammable fluids, i.e. Class I. Class I fluids are divided into following subclasses:

   1) Class IA fluids: Fluids with flash points lower than 22.8 °C and with boiling points lower than 37.8 °C.

   2) Class IB fluids: Fluids with flash points lower than 22.8 °C and with boiling points equal to or higher than 37.8 °C.

   3) Class IC fluids: Fluids with flash points higher than 22.8 °C and lower than 37.8 °C.

Class II and Class IIIA fluids, which are heated more than their flash points, are accepted as Class I fluids.

Class C Fire

Fires of combustible materials in gaseous form. These are the fires of combustible gases and materials that are in the form of liquefied gas under pressure.

- Natural and produced gases, such as methane, hydrogen, acetylene;
- Hydrocarbons in gaseous form, such as LPG, propane, natural gas.

Particularly dry chemical powdered are kept at places, where Class C fires may outbreak.

As a general rule, initially the source of fire is cut off in Class C fires and the fire is extinguished through cooling. Persons, who are trying to extinguish the fire, must absolutely use masks with fresh air cylinder in case of toxic gas fires.

Dry chemical powdered fire extinguishers must be used when extinguishing small scaled fires and the leak must be tried to be solved. Large scale fires must be left to burn under control and the combustible material must be left to finish by burning.

Class D Fire

These are the fires of light metals, such as titanium, aluminum, magnesium, uranium, phosphor, and sodium.

Particularly dry chemical powedered extinguishers are kept at places, where there is a possibility of outbreak of Class D fires, and specially manufactured Class D dry chemical powders and water mist are used to extinguish the fire.

Class E Fire

Fires of cables, transformers, boards, switches, electrical engines, electrical devices and fires of electricity up to 1000 Volts. Since CO2 is not a conductor, CO2 fire extinguishers can be used to extinguish electricity fires. Energy must be disconnected before responding to these types of fires and water must never be used until the energy is disconnected. Furthermore, FM–200 systems can be used against currents with maximum 100,000 Volts.

Hazardous Gases Occurring During the Fire

General information on combustion gases, which occur as a result of fire, are given in the below table.

Table 8.10.2. General Information on Combustion Gases

Combustion Gases	General Characteristics	Limit of Exposure for 8 Hours (TWA)	Maximum Exposure Limit for 15 Minutes (STEL)	Occurring Fires
Carbon dioxide (CO_2)	Suffocating, Odourless and colourless	5000 ppm	30000 ppm	Occurs in all fires.
Carbon monoxide (CO)	Poisonous, damages nervous system by penetrating the blood.	25 ppm	100 ppm	Occurs in all fires in case full combustion does not realize.
Sulphur dioxide (SO_2)	Carcinogenic, Abrasive (eyes, skin and respiratory tracts), it has a sharp and irritating smell.	2 ppm 5.2 mg/m3	5 ppm 10.4 mg/m3	It occurs in fires, which contain sulphur or H_2S.

Fire Types

Possible types of fire that may occur in refineries are as follows:

- Process Fires
- Tank Fires
- Building Fires

Process Fires

Since fires and/or explosions that might occur in process sites are directly connected with process conditions, fully understanding these conditions and possible outcomes are vital for firefighting.

Types of fires that are mostly seen in terms of their characteristics are as follows:

- Spillage Fire
- Jet Fire
- Flash Fire
- Vapor (Hydrocarbon) Cloud Explosion
- BLEVE (Boiling Liquid Expanding Vapor Explosion)

Figure 8.10.2. Example of Process Fire Fed Through Three Dimensional Pressure

Spillage Fire

Spillage Fires occur with accumulation of pentane and any other heavier (>C5) hydrocarbon or butane compounds lower than 0°C in an environment. Additionally cryogenic propane and lighter compounds (<C4) may cause Spillage Fires under conditions that are close to atmospheric boiling point.

Leaks occurring in larger rates than evaporation rate under specified conditions cause Spillage Fires either on their own or together with various jet fires. In such cases:

- Initially, cut the flow that feed the spillage;
- If possible, contain the spillage and reduce the amount of spillage with drainage systems;
- Respond to spillage fires with a mixture of foam-water. Minimum foam-water mixture ratio and minimum duration of application are given in Table 3.
- Continue on responding by keeping the foam cover stable until the fire is completely extinguished and is reduced under self-ignition temperature.

- Cool the equipment that are affected from thermal heat.

Table 8.10.3. Minimum Foam Application Rate and Duration on Spillage Fires at Areas Diked with Portable Foam Nozzle or Monitors or Not Diked*

Foam Type	Minimum Application Ratio		Minimum Responding Duration (minutes)	Possible Spilled Product
	L/min*m^2	gpm/ft^2		
Protein and Fluoroprotein	6.5	0.16	15	Hydrocarbon
AFFF, FFFP, Alcohol-resistant AFFF or FFFP	4.1	0.10	15	Hydrocarbon
Alcohol-resistant Foam	Consult the manufacturer for application amount required for specific products		15	Combustible - flammable fluids requiring to be responded with alcohol-resistant foam

**Reference: NFPA 11 Standard for Low-, Medium-, and High-Expansion foam, 2010 Edition, page 11-23, Table 5.7.3.2 and Table 5.8.1.2.*

Jet Fire

The type of fire, in which a combustible fluid or gas spreads from a high pressure environment to a lower pressure environment in the form of a burst that is faster than sound and does cause high pressure/high temperature and then it is burned.. Jet fires can be in gas or fluid-gas form. Liquefied gases under pressure do not cause fluid spillage fires but fluid-gas or gases that were liquefied in atmospheric environment may cause spillage fires. In such case, it might be required to fight with spillage fires too, depending on various obstacles in the environment, the shape and slope of ground, and capacity of drainage facilities.

Most important risk originating from jet fires is direct contact of equipment and staff that might be available in the environment with the flame or exposure to high amount of energy (radiant heat and pressure) caused by this flame. Size and shape of the flame of such type of fires depend on the properties of burning material as well as parameters, such as process (pressure, flow, size of leak, etc.) and atmospheric conditions. The heat that might arise out of the fire can be between 50 kW/m2 (80,000 Btu/h·ft2) and 450 kW/m2 (140,000 Btu/h·ft2).

Fighting with such type of fires by using foam is not effective due to the nature and geometry of fire (height, ejection of fire from a narrow location, viscosity of foam, etc.).

Flash Fire

Flash Fire is burning of a combustible fluid or gas from one environment to the other at a speed slower than the sound of speed. The damage caused by pressure is at negligible levels,

compared to jet fire, but the effect of heat cannot be ignored both for staff and equipment. If it is not taken under control or the pressure is increased unwillingly, it might turn into a jet fire.

Fighting with such type of fires by using foam may not produce expected results due to the nature and geometry of fire (height, ejection of fire from a narrow location, viscosity of foam, etc.).

Vapor (Hydrocarbon) Cloud Explosion

Vapor Cloud Expansion is a rapid fire that occurs after accumulation of a hydrocarbon vapor in an environment originating from a combustible material, which burns rapidly when it reaches combustion limits and finds a source of ignition.

Since this vapor burns faster than the speed of sound, a highly destructing pressure and heat wave occurs. The effect or damage is at its highest level particularly after the burning of large amounts of accumulations, which meet optimum burning conditions as a result of obstacles that contain the vapor cloud in outdoor.

The actions to be taken in case of Vapor Cloud Explosion are actually for preventing the occurrence of incident rather than removing or decreasing the effects, which is quite different than firefighting strategies.

BLEVE (Boiling Liquid Expanding Vapor Explosion)

As the flame surrounding the tank boils liquid LPG within the tank, the gas phase within the tank increases and liquid phase decreases. If this gas, compressed within the tank, continues to heat and the tank's resistance pressure is exceeded or the tank fails to resist enough due to overheating of its walls, the tank ruptures. Then the fluid that comes out is expanded and is transformed into gas phase, which causes a catastrophic effect with immediate burning. This is called BLEVE.

8.11. PROCEDURES FOR APPROVING, INSPECTING, TESTING, MAINTENANCE AND AVAILABILITY OF FIRE PROTECTION SYSTEMS

- Standard on Controlling and Maintenance of Fire Equipment and Protective Materials

PURPOSE

The purpose of this standard is to describe which principles shall be followed to store, distribute, use and maintain firefighting equipment and protective materials that are used in the refineries.

DEFINITIONS

Firefighting Cloth

They must be made of high temperature and water resistant materials in order to protect Firefighting Staff from radiant heat. Staff must not approach directly to the flame with this cloth without water mist.

Firefighting Hard Hat and Face Guard

They must be made of materials that will protect the had of Firefighting Staff from flame, heat and impacts. Face guard should be fixed on the hat and it must be made of a material that can provide a clear view and is not affected from heat (thermoplastic, etc.).

Firefighting Gloves

It must have long stockings and be made of heat and water resistant materials.

Firefighting Boot

It must have long stockings and be made of heat and water resistant materials.

IMPLEMENTATION

Fire Protection Water Pumps and Lines

Periodical Control of Fire Protection Water and Foam Pumps

All pumps shall be operated at least once in a day by the units that are responsible for operation of these pumps and they shall be operated and controlled also by the staff of relevant unit, Safety, Environment and Quality Department (TÇM) and Maintenance Department at least once in a week. Diesel pumps shall be controlled once in a week. The unit, which is responsible for operation of the diesel pump, shall complete an Urgent Maintenance Request Form for the failures that were found.

Periodical Control of Lodgement Fire Protection Water Pumps (İzmit, Kırıkkale and Batman Refineries)

These pumps shall be operated and controlled by authorized representatives of TÇM and/or Human Resources Department (İKM) in every fifteen days and TÇM and/or İKM shall complete an Urgent Maintenance Request Form for the failures that were found.

Annual Performance Control of Fire Protection Water Pumps

All fire protection water pumps are controlled by relevant units in terms of their capacities. Performance test report, prepared by relevant units, shall be submitted to TÇM.

Control of Fire Protection Water Circuit

TÇM controls the lines, hydrants, fixed water / foam monitors and valves of fire protection water circuit once in a month in order to determine whether they are functioning or not.

Some amount of water is discharged once in a year by opening sufficient number of hydrants or flush valves in order to clean fire protection water circuit. Furthermore, circuit breaker valves are closed and then opened in order to be lubricated once in a year.

Anode test is made by Technical Control Chief Engineer (TKB) once in a year at cathodic protected fire protection water lines in order to control whether they are functioning or not.

Check valve and bypass on the fire protection water line, routing to platform pier, are controlled every month by TÇM staff and it is checked whether water is flowing smoothly through the check valve and bypass or not (İzmit Refinery).

Protecting the Lines from Frost Hazard

Necessary measures are taken to protect fire protection water lines, hydrants / collectors and 1” pulley hoses from frost hazard in cold weather by the unit staff for those equipment within

the unit and by TÇM staff for those equipment available on the main line. Block valves of collectors, hydrants and 1" pulley hoses are closed and their drain valves are opened to flush water. If there is not any block valve, drain valves are opened a little to move the water. If these hydrants and hoses are used again, staff of the relevant unit is responsible for taking these measures again for the equipment within unit whereas TÇM is responsible for equipment located out of units.

Sprinklers and Their Maintenance

TÇM is responsible to control Sprinklers and fire extinguishing equipment equipped thereon in every shift, to determine whether they are functioning or not, and to make necessary maintenance works.

Controlling Firefighting Equipment and Systems

All mobile hose pulleys, mobile water / foam monitors, mist nozzles, and firefighting equipment located in TÇM are controlled once in a month by TÇM's staff in order to determine whether they are functioning or not. Furthermore, the power generator for lighting and fresh air compressors within TÇM are also controlled once in a week and they are recorded to weekly checklist. TÇM is responsible to maintain and keep these equipment fully functional.

Controlling the Fire Hoses

All new fire hoses are tested by TÇM's staff under 22 kg/cm² pressure before they are put into service.

Furthermore, all other hoses available in TÇM's material warehouse, sprinklers and hose cabinets are also tested by TÇM's staff under 22 kg/cm² pressure once in a year.

Recording the Tests

Testing pressure, testing date and name of the staff that made the test are written on the label that is affixed to the hose and bound to a place close to female coupling. These values are also recorded to test form.

Used Hoses

After hoses are used, they are washed, dried and tested by TÇM's staff on shift before they are put into service again.

Controlling the First Respond Materials

1" hose pulleys and water / foam monitors are controlled by unit's staff in each shift to determine whether they are functioning or not. An Urgent Maintenance Work Request is prepared for the failures to be corrected and these failures are notified to TÇM by the unit chief or chief operator.

Also 1" hose pulleys and water / foam monitors are controlled by TÇM's staff on shift in every month and results of these inspections are recorded to monthly control report and card.

Controlling the Hose Pulleys and Other Firefighting Equipment When Unit Stops

Hose pulleys and other firefighting equipment in the units are controlled separately by the Operation Department and TÇM's staff before each unit stoppage and commissioning in order to ensure that they are fully functional.

Controlling Portable and Fixed Fire Extinguishing Devices

Portable fire extinguishing and safety equipment (portable fire extinguisher, monitor, detection and automatic extinguishing systems) in the units are controlled by the unit's staff in every shift

and results of these controls are recorded to shift book. Devices that need maintenance or refilling are notified to TÇM. TÇM's staff controls all firefighting equipment once in a month and affixes/binds a signed label, indicating the date of control and condition of the material on the equipment and records the results to the equipment card.

Fire Protection Water Sprinklers and Fixed Foam Systems

Sprinkler systems of LPG and Land Filling Sites are controlled by TÇM and Operations Department staff once in a week and sprinkler systems of unit pumps are controlled when the unit is being maintained.

Tank sprinkler systems are controlled by TÇM and Operations Department staff in every 3 (three) months.

Relevant unit completes a Maintenance Work Request for the failures that were found.

Tank foam systems are tested by relevant unit's staff and TÇM's staff by producing foam once in a year. As a part of this control, diaphragms of foam rooms within tanks with fixed ceiling are also controlled by TÇM once in a year and relevant unit completes a Maintenance Work Request for the failures that were found.

Fire Protection and Firefighting Materials at Piers

Marine filling staff ensures that hose pulleys, hydrants, automatic and manual operating water and foam monitors available at piers do always function fully.

Water and foam pumps are activated once in a month by Marine Filling Department and TÇM's staff on shift in order to test these water and foam pumps. If there is any failure, Marine Filling Department prepares a Maintenance Work Request. Foam lines are cleaned after the test by being flushed with water.

DİTAŞ ensures that fire protection water and foam systems of towboats are always fully functional. Records of these controls are kept and a copy of them is submitted to TÇM in every 3 months.

Map of Firefighting Systems

Original copy of large sized fire map, which shows the locations of main firefighting equipment as well as the hydrants, valves, etc. of the systems, shall be kept at TÇM. This map is reviewed everyday and open and closed valves of disabled lines are marked on the map.

Controlling Safety Material Cabinets and Safety Showers

Safety cabinets (mask with air cylinder, safety googles, ear plugs, face guards, fire blanket, acid gloves, etc.) located in units and workshops and safety showers are controlled by the unit staff everyday and results of these controls are written to the shift book. Any fault and deficiency that can be found in these materials and equipment are promptly notified to TÇM. These materials and equipment are controlled by TÇM once in a month.

Records of Protective Fire Equipment

Any modification made on protecting equipment, such as hydrants, valves, hoses, fire extinguishing devices, first respond hose pulleys, fresh air masks, etc. and records of their controls and maintenances are kept by TÇM. Conditions of these materials are published by TÇM at the end of every month in the monthly operations report.

Utilization and Maintenance of Firefighting Cloth

Firefighting cloth is worn by 1st level staff in case of fire and drill. It must not be used for any other purpose.

When the cloth gets dirty, it is washed manually by using warm water and soap or detergent. It must not be dry-cleaned.

Clothes must not be folded away until they are completely dried.

Firefighting clothes must be cleaned by the unit that used them.

Utilization and Maintenance of Firefighting Hard Hat and Face Guard

Hard hat protects the head of staff from impacts during firefighting.

Face guard protects the face of staff from flame when he/she is in close contact with the fire.

Any damaged hat or face guard must not be used.

An additional paint must never be used.

They must not be stored in places, where there is direct sunlight.

Only soap, detergent and water must be used as cleaning material.

Chemicals and abrasives, such as benzene, acetone, etc. must not be used for cleaning purposes.

Firefighting hard hat must be maintained and cleaned by the staff of unit, at where it is kept.

No additional accessory must be added to the original design.

- Sea barrier utilization instructions

Available materials Quantity

1. Barrier drum
2. Hydraulic pump
3. Hydraulic hose
4. Air compressor
5. Air hose

STANDARD FOR LAYING DOWN THE MARINE BARRIER

1. Connect the hydraulic hose between hydraulic pump and drum.
2. Load the air compressor to marine boat.
3. Start the hydraulic pump.
4. Give the rope at the end of marine barrier to Marine Boat.
5. Connect the marine barrier to air compressor at Marine Boat and start the compressor.
6. Lay down the barrier on the sea by opening hydraulic valve on the drum.
7. Ensure that pressure relief valves on the barrier are closed.
8. Balance the speed of drum and the speed of Marine Boat.

- Instructions for Use of Marine Product Scrapers

SCRAPER NO. 1
Fuel: Diesel

Materials: 1 Hydraulic pump (Product suction pump is located on Hydraulic Pump)

1 Scraper

2 Hydraulic hoses

2 Product suction hoses

OPERATION

1. Connect hydraulic hoses and product suction hoses between hydraulic pump and scraper.
2. Lower the scraper on the area to be cleaned.
3. Connect product exit hose.
4. Start the hydraulic pump.
5. Open hydraulic valves on the hydraulic pomp and ensure that scraper and product suction pump operates.
6. Adjust rotating cycle of scraper disks through the hydraulic pump.

SCRAPER NO. 2
Fuel: Diesel

Materials: 1 Hydraulic pump

1 Scraper

4 Hydraulic hoses

2 Product suction hoses

1 Product suction pump

OPERATION

1. Connect hydraulic hoses and product suction hoses between hydraulic pump and scraper.
2. Connect the hoses between product suction pump and hydraulic pump.
3. Lower the scraper on the area to be cleaned.
4. Start the hydraulic pump.
5. Open hydraulic valves on the hydraulic pomp and ensure that scraper and product suction pump operates.
6. Adjust rotating cycle of scraper disks through the hydraulic pump.

- Maintenance Instructions for Inflatable Marine Barrier

OPERATIONAL MAINTENANCE

1. Periodically check during the operation that independent air tubes that form the barrier are completely filled with air.

2. If they are deflated, restart the air pump, fill the deflated section of barrier with air and check again.
3. If it is damaged, separate the deflated section from barrier with the help of connectors on both ends and combine undamaged sections.
4. Repair or, if possible, replace the damaged section.

REPAIRING THE BARRIER

1. Barrier is made of neoprene and coated with nylon. Repair the damaged section by affixing a patch, made of same material.
2. Repair tears on the barrier as soon as possible. Bring the barrier for test pressure and wait for 24 hours to be sure about the tear before repairing the barrier.
3. Prepare the patch so as to exceed the damaged section at least by 2.5 cm.

There are two methods to affix the patch:

(1) Hot Bonding;

(2) Cold Bonding;

Always hot bonding must be preferred.

Hot Bonding

Portable vulcanizer, which is used for hot bonding, is composed of two plates, one of which is heated by electricity and controlled by a thermostat and the other one is a plate with airbag that compresses the heated plate.

1- Supply 110 V power for vulcanizer.

2- Set the temperature control value as 155 degrees. It will take approximately 20 minutes.

3. Close air control valves. Connect air supply hose to the adapter. Set the air at 60 psia with pressure regulator.

4. Prepare an area for 75 mm. around the damaged area, which is larger than the patch.

5. Surfaces to be bonded must be dry, clean and unlubricated. Wipe the surfaces with a cloth, soaked into toluene for this purpose and then sand the surface and wipe again with a cloth, soaked into toluene.

6. Apply one layer of SH 5835 adhesive on both surfaces. Leave for 20 minutes to dry.

7. After the first layer is dried, apply the second layer and leave for 20 minutes to dry.

8. Combine both surfaces in a manner so as not to leave any air between them.

9. Place it into vulcanizer as the area to be patched faces upward. Ensure that the area to be bonded is not folded and lower the press.

10. Close air control valve at the bottom. Open air control valve on top. The air being pressed will fill the air bag and this will press on the barrier and the patch.

11. Duration of pressing depends on the number of layers of barrier material.

    Up to 5 layers = 20 minutes

    5 - 10 layers = 30 minutes

    More than 10 layers = 40 minutes

12. Close air control valve on top after pressing is completed. Open air control valve to discharge air within the bag.

13. Lift the press up. Barrier is ready to use.

Cold Bonding

1. Surfaces must be dry, clean and unlubricated. A cloth, soaked with Bostik M501 thinner and cleaner must be used to clean the surface. After the surface is cleaned, grind the surface with a sanding fabric and then clean it with another cloth that is soaked with thinner.

2. Place Bostik 2402 adhesive and Bostikure D improvement material in a container with a ratio of 100/6 in terms of weight and stir them for 5 minutes.

3. Apply the mixture on both surfaces by a brush.

4. Leave both surfaces to dry for five to fifteen minutes.

Note: Apply a thin layer of adhesive on the surfaces and wait for 20-30 minutes for a good bonding. Then, apply another thin layer and wait for 5 - 15 minutes.

5. Combine both surfaces as strong as possible without leaving any air between them. Combined parts can be used immediately.

6. The adhesive will be at its best condition after 48 hours under atmospheric conditions and its effect will increase in maximum 7 days. This effect can be achieved faster by heating it for 2 hours at 70 degrees.

REPLACEMENT OF VALVES ON THE BARRIER

Air Discharging and Filling Valves can be replaced by using a 1.3/4” wrench.

(1) Replacement of Air Discharging Valves

1. Deflate the barrier for replacement of valve.

2. Close the valve and remove yellow cover.

3. Loosen the valve’s nuts by turning them anticlockwise with the wrench. Remove loosened nut and gasket by hand.

4. Push lower part of the valve into the barrier and rotate it.

5. When freed from the slots on the bottom of the barrier, remove old part.

6. Insert the lower part of new valve by rotating through the opening and place it on the slots within the barrier.

7. Place the gasket on top of valve base so that geared part is left at the bottom.

8. Place valve's nuts manually and tight them with a wrench.

(2) Replacement of Air Filling Valves

Filling valves are located on top of air feeding channels at joints of barrier sections.

1. Remove air discharging valve from the barrier as described above.

2. Barrier's air valve is placed between outer surface of air tube feeding channel and retaining part.

3. Dismantle the white colored filling valve through the opening after discharging valve is removed.

4. Push upper part of the valve through the opening on top of retaining part.

5. Apply just the opposite of above procedure and assemble the new valve.

6. Be sure that valve is fully functioning.

7. Put air valve again on its place.

8. Remount the air discharge valve.

CLEANING THE BARRIER

1. Clean all oil granules on the barriers after each use.

2. Wash the barriers with pressurized fresh water or sea water.

3. Large oil stains should be softened with diesel oil and then washed with detergents.

Remove stubborn and adhesive stains by using hard brushes and then clean them

with pressurized water.

NOTE:

Complete cleaning in hot weather before oil and emulsion stains get dried.

Cleaning with water vapor can be made in short periods, provided that the temperature does not exceed 120 C.

MONTHLY MAINTENANCE OF AIR BLOWING UNIT

1. Remove the belt and its protector and check its condition and be sure that it is not contaminated with oil and grease. If it is damaged, replace with a new belt.

2. Check the pulley's condition and be sure that it is not contaminated with oil and grease. If it is torn and damaged, replace with a new one.

3. Ensure impermeability at fan bearings for long life and do not lubricate them.

4. If bearings are not functioning properly or causing sound, replace the entire bearing set. If maintenance staff is not experienced enough, it might be required to replace the bearing set again!

5. Since bearings can be damaged while replacing the bearing set, do not tight bolts too much.

6. After they are replaced, check the calibration of pulleys.

MONTHLY MAINTENANCE OF POWER UNIT

Check the unit as described in section 5 above and additionally check the condition of electrolyte and hydraulic oil.

MAINTENANCE OF REEL

1. After each use, wash the reels of barriers with fresh water by using a hose in order to protect them from the damages that might be caused by salt and other corrosive substances.

2. If hydraulic hoses are not connected, lubricate joints with hydraulic oil and cover with a plastic bag.

NOTE:

Gear oil must be replaced every year or after each 1500 hours of operation and gear box must be cleaned with the washing fluid recommended by the oil manufacturer.

Rotating bearings must be lubricated with grease. Please see “HI INTEGRITY BOOM REEL SYSTEMS- OPERATING AND MAINTENANCE MANUAL”, provided by the manufacturer, for all details.

8.12 Precautions to be taken when fire protection systems do not work

When there is a need for an emergency response and the fire protection systems do not work, the closest team is notified by following the procedure written in Article 8.4.

8.13 Other risk control equipment

Fighting sea fires

ARTICLE 32 –

1) Sea fires that may occur in the port administrative area, dated 06/8/1975 and numbered 7/10357

All public and private institutions intervene in accordance with the provisions of the Regulation on Prevention, Extinguishing and Rescue Measures to be Taken Against Fires That Can Be Taken On Land, Fires That Can Be Taken On The Sea, Port or On The Shore, And Can Reach And Spread On The Land or Reach The Coast, Port and Sea. Fixed and

portable fire extinguishers, first aid units and equipment are kept in full, ready and working condition in coastal facilities.

2) Extinguishing fires that may occur in coastal facilities are carried out by fire extinguishing teams equipped with the necessary tools and equipment created in accordance with the relevant legislation.

Organizations engaged in tugboat operations participate in extinguishing activities with the instruction of the port authority.

9. WORKERS' HEALTH AND SAFETY

9.1 Measures for workers' health and safety

The measures that we take in our refinery for general workers' health and safety can be summarized as follows:

It is required to use basic personal protective equipment at the refinery. (Hard hat, goggles, work clothes, gloves, safety shoes, ear protectors)

It is not allowed to smoke at our site except the designated smoking cabinets and employees cannot carry lighters or matches.

It is forbidden to use mobile phones except cafeteria and administrative buildings.

The speed limit within refinery is 40 km/h. It is not allowed to overtake a vehicle and sound the horn. Vehicles must be parked toward the gate direction and their keys must be left in. It is not allowed to park in front of fire extinguishers, at the entrance of units or on bridges.

Safety belts must be used within the vehicles.

Pedestrians must walk on pavements and, if there is not any pavement, on the left side of the road (in order to see the vehicles coming across).

No work can be performed without following necessary permission procedure.

Parachute type safety belts must be used while working at height.

There are two types of emergency siren in our refinery. One of them is fire alert and the second one is electricity outage alert.

All warnings and signs must be followed.

It is not allowed to run, yell and joke within the refinery.

It is prohibited to bring or be under the effect of alcoholic beverages or drugs within the refinery.

Refinery staff receive periodical trainings for 16 hours every year as required by "Regulation on Procedures and Principles of Workers' Health and Safety Trainings for Staff".

Any staff of the contractor, who will enter the refinery, receives on-the-job training before entering the work site. Persons that fail to pass the exam are not allowed to enter the refinery.

Units are performing risk assessments and these assessments are renewed either in every 2 years or after an incident that occurred at the unit.

9.2 Details of personal protective clothes and procedures for using them

PURPOSE and SCOPE

The purpose of this standard is to determine the issues regarding work safety clothing that the staff has to use.

DEFINITIONS

None.

IMPLEMENTATION

GENERAL RULES AND PRINCIPLES

- Tüpraş staff has to use work safety clothing (safety hat, work clothes, safety shoes/boots, work gloves, goggles and ear protector, etc.) if necessary while working.
- Supervisors of the staff are responsible to ensure that work safety clothing is used. Staff, who does not wear (use) work safety clothing will be removed from the work site by the relevant authorities of the work.
- If protective clothes are contaminated with chemicals, the staff must immediately remove them and take a shower.
- Earplugs or headsets must certainly be used at noisy locations.
- While working at least two meters high from the ground, a scaffolding must be set and safety belts must be used.

HARD HAT (SAFETY HAT)

- It protects the head from the danger of any item that might fall down and from hitting the head to any place.
- Any person, who enters the refinery's operational site and any dangerous area, must wear safety hat (hard hat) even if he/she is a guest.
- Supervisor and staff of relevant units must remove the persons, who enter the unit without any hard hat, from the unit.
- Safety hat shall conform to EN 397 norms and be screwed type that can be adjusted according to the head.

WORK CLOTHES

- Work clothes, made of nomex fabric, are provided for twice in a year as summer and winter clothes.
- They will be provided as jacket, trousers or overalls.
- The word "Tüpraş" and its logo will be written on the front and back side of the work jacket.
- Work clothes will be long sleeved.
- No apron will be worn in maintenance and process units.
- Details of work clothes will be written on the relevant specifications.

SAFETY SHOES/BOOTS

- They will protect the staff's feet from falling items and the risk of crushing of feet.
- They will be worn at maintenance sections and boiler rooms of units.
- Safety shoes/boots will conform to TS EN ISO 20345:2007 norms.

- The leather will be waterproof.
- Base of the safety shoes/boots will be made of nitryl or polyurethane material, it will resist to acidic, caustic and fluid hydrocarbons and it will not deform easily.
- Leather of safety shoes/boots will resist to at least 2000 volts and base will resist to at least 10000 volts.
- Safety shoes/boots will have non-slippery base.
- Front of the safety shoes/boots will have composite toe protector. Electricity isolation will be performed particularly at the steel toe of safety shoes/boots.
- Shoe laces will be opened easily in case of emergency.
- The boot will not be heavy, be comfortable and ergonomic and it will fit to any foot shape.

WORK GLOVES

- The gloves will be completely made of the best quality leather. The leather used for palms and outer section will have the same specifications.
- The gloves will be ergonomic and fit any size of hand.
- Used gloves will be kept within hazardous waste barrels.
- Other details will conform to the applicable specifications and TS EN 420.
- Gloves used depending on the works being performed will be provided by TÇM Departments upon request.

GOGGLES AND FACE SHIELD

- Persons that are performing works that might be dangerous for eyes and persons that are close to such type of works must wear goggles or face shields. Works that require use of eye and face shields are written below:
- Works, in which grinding wheel and any kind of leveling tool is used;
- While working with a hammer or performing any work that require contact of metals with each other;
- Works for drilling, cutting or leveling the surfaces of metals;
- When using pneumatic concrete or paint guns;
- At places, where dusts or other similar materials are dispersed;
- When cleaning bricks, tiles and construction materials;
- Glass cutting works;
- When working with melted asphalt and tar;
- Works of electric arc cutting and oxygen cutting;
- When using pressurized air for cleaning;
- When working with chemicals, hot liquids or vapor;
- No vapor must occur within the goggles and their sides must be closed and they must be framed type.
- Under normal conditions, it will be possible to adjust them in a manner to allow any staff, who uses glasses, to put goggles on top of glasses.

SAFETY BELT

- Safety belts (in conformity with TS EN 361) must certainly be used at places higher than at least 2 (two) meters from the ground, at where there is a risk of falling.
- Safety belt must be parachuter type.
- Belts must be checked thoroughly before they are used. Any faulty safety belt must not be used.

- Rope hook of the belt must be fixed safely to a solid place.
- The gap at the safety belt must be kept at minimum, based on the nature of the work. Rope hook must never be secured at or lower than the waist level. Otherwise, the safety belt may damage the back or waist of the working staff.
- If necessary, depending on the condition of the work, reinforcing ropes must be used together with the safety belt.
- Rupture strength of the rope and hook of safety belt must at least be 1160 kg.

HOT WORK GLOVES

- In case of non-liquid or non-vapor works that are performed as dry hot lines and valves, hot work gloves must be used as a protector.
- The gloves must be made of kevlar.
- The gloves must have long sleeves.
- Hot work gloves are supplied from TÇM.

PROTECTIVE CLOTHES AGAINST CHEMICALS

- Long sleeved protective gloves must be used when working with chemicals and irritating substances, such as acidic, caustic, catalyst, etc.
- Chemical gloves are supplied from TÇM.

CATALYST CLOTHES

- Classical TYVEK type catalyst clothes in white color must be used by the staff when loading and unloading catalysts.
- Catalyst clothes must be supplied from TÇM.

CHEMICALS CLOTHES

- Gray colored TYVEK-F type clothes for chemicals must be used when working with chemicals, except acids and TEL-B.
- Clothes for chemicals must be supplied from TÇM.

ACID CLOTHES WITH VISOR

- There are 2 types of them in white and blue color.
- They are used for the works performed with acids and caustic substances.
- They are used with full face mask with air cannister and airline (fresh air hose) mask.
- Clothes for chemicals with viewfinder must be supplied from TÇM.

HEADSETS OR EARPLUGS

- The staff must use headsets or earplugs in case the noise level is more than 80 decibels.
- Earplugs reduce the noise level by 25 decibels whereas headsets reduce by 30 decibels.
- Earplugs must be supplied from TÇM.

MASKS

- Two types of masks are being used in the refinery against hazardous gases.
- Pressurized air masks (positive pressure masks)
- Gas masks with filters (negative pressure masks)
- If any hazardous gas is detected at closed vessels, confined spaces, pits, etc. as a result of gas measurement, it is required to use appropriate type of masks, depending on the concentration of oxygen and gas.

- If there is not any hazardous gas and the oxygen amount is more than 19% in a confined space as a result of gas measurement, it is allowed to work without a mask.

Dust mask

- Employees must minimize powderization of catalysts when loading and unloading them and they must use FFP2SV / FFP3SV type dust mask.
- Dust mask must be used for metal grinding works and in such type of dusty environments.
- Dust mask is supplied from TÇM.

Pressurized Air Masks

- They must be used in cases, where the oxygen concentration is less than 19% or concentration of hazardous gases is more than maximum workable value (e.g. more than 10 ppm for H2S and more than 30 ppm for CO).
- Usually three types of air masks are used in refineries.
- Air-line system with compressor
- Air-line system with cylinder
- Full face mask with air cylinder is available in the units and TÇM.

Air-line system with compressor

- Available in TÇM.
- It is composed of air filter, air compressor with electrical engine, air drum, pressure regulator, rigid air hose and full face mask. Fresh air can be provided to maximum 5 (five) staff at the same time thanks to Air-Line system.

Air-line system with cylinder

- Available in TÇM.
- It is composed of cylinder (50 liters capacity), pressure regulator, rigid air hose and full face mask. Fresh air can be provided to maximum 3 (three) staff at the same time thanks to Air-Line system with cylinder.

Full face mask with air cylinder.

- Available in the units and TÇM.
- It is composed of a portable air cylinder, backrest, regulator, air hose and full face mask.
- The volume of steel cylinders is 6 liters whereas the volume of carbon composite cylinder is 6.8 liters. Working pressures are maximum 200 or 300 bas.
- The utilization period of masks with air cylinder varies, depending on the breathing speed of the user. In average: Masks with a cylinder of 6 liters air at 200 bar pressure are used for short term works.
- Full face masks with air cylinders, which are kept at technical safety material cabinets of the units, must always be kept ready to use and the unit staff is responsible for keeping them well-maintained. In case cylinder pressure is reduced to less than 100 bars, units are responsible to inform TÇM and request the cylinders to be refilled and TÇM is responsible to refill these cylinders.

Masks with Filter

- They are available in safety cabinets of the units and in TÇM.
- They are used in case oxygen concentration is more than 19% and hazardous gas concentration is less than 30 ppm.
- These filters protect from organic and inorganic substance vapors, acid vapors, sulfur dioxide, ammonia, dusts of heavy metals and catalysts and P3 dust filter protects from any dust as well as dusts of catalysts and heavy metals.

PERSONAL PROTECTORS TO BE USED AT REFINERIES ACCORDING TO THE NATURE OF WORK

- Since a negative pressure (vacuum) occurs within the mask when taking a breath, it is very important that the mask must fully fit to the face and no air penetrates from the sides of mask. The staff must be sure that no air penetrates from the sides of the mask. After the mask is worn, the filter with cannister is closed by hand and it is tried to take a breath. If it is not possible to take a breath, this means that the mask fully fits on the face.
- Economic lives of these filters are limited. If the economic life, stated by the company, is expired they cannot be used. As long as the protecting plug under the filter is kept open, the filter is considered as being used and its economic life is shortened. Therefore filters, which were left open or the duration of use of which is not known, must not be used and destroyed.
- If the filter has not expired yet, the person that uses the mask must switch the filter off from the bottom plug. The mask must be washed with soapy water and kept within a nylon bag in order not to be contaminated with dust and other similar materials.
- The units are responsible to ensure that masks and filters within the safety cabinets are always kept clean in sufficient numbers and TÇM is responsible to complete any missing mask and filter.

Table 9.1 Personal protectors to be used at refineries according to the nature of work

WORK TO BE PERFORMED	PERSONAL PROTECTORS TO BE USED
Working at the Refinery Site	Hard hat, Work clothes, Work gloves, Safety shoes/boots and Goggles.
Checking Flame in the Furnace, Checking the Burner	Face shield.
Catalyst Loading and Unloading	Catalyst clothes, Full face mask with P3 type filter/FFP2S type dust mask, Dust goggles and Chemical gloves
Working with Chemicals	Clothes for chemicals, Chemical gloves, Air-Line Mask or Full face mask with air cylinder
Working with Acids, Caustics	Clothes for chemicals with visor, Chemical gloves and Full face mask with air cylinder/Airline mask
Working at 2 (two) meters high from the ground	Safety Belt must be used and hook must be secured.
Working with Lead Tetra Ethyl	Special protector clothes, Chemical gloves and Full face mask with air cylinder
Working with H2S gas	Full face mask with air cylinder

Working with CO	Full face mask with air cylinder/Air-Line
Working at Grinding Bench	Gloves and Goggles/Face shield
Working with Hand Stone	Gloves and Goggles/Face shield
Welding Works	Hard hat, Welder's mask, Welder's gloves.
Working with hot liquids or vapor	Gloves resistant to hot liquids or vapor and Face shield
Working at Dry Hot Lines	Hot Work Gloves

9.3 Confined space entry clearance measures and procedures

Working in confined spaces or containers is dangerous. For this reason, working in confined space should be avoided unless necessary. If confined work is unavoidable, confined space hazards must be identified, risks assessed, and precautions taken.

Ships and sea vehicles carrying dangerous cargos are not allowed to work in confined space, except in special cases, within the borders of the port facility. If work is to be carried out inconfined space, work is carried out in accordance with the "TPR.TEM.STD.0102 Kapalı Alan Giriş Standartı" and "TPR.TEM.STD.0119 İş İzin Sistemi Standardı" standards.

10. OTHER ISSUES

10.1 Validity of Dangerous Cargo Handling Certificate

Obligation of Certificate

• Shore facilities that handle dangerous cargos must obtain a Dangerous cargos Conformity Certificate according to the within the the Regulation about Safety Transport and Loading of Dangerous Cargos by Sea.

• In case of temporary non-compliance with the provisions of the relevant directive, it is obligatory to obtain special permission from the Administration.

Obligation to have Dangerous Cargo Conformity Certificate

Transport, storage, handling, loading and unloading operations of dangerous cargos are carried out at Tüpraş İzmit Port facility. In this respect, Dangerous cargos Conformity Certificate is obtained according to the Dangerous Cargo Conformity Certificate Directive published by the Administration.

10.2 Duties Defined for Dangerous cargos Safety Advisor

The main duty of the consultant is to facilitate the management of these activities in the safest way by determining and using the most appropriate tools and activities within the scope of the requirements of the work, under the responsibility of the person at the head of the business.

Considering the operations in the facility, a consultant primarily performs the following tasks:

a) To monitor compliance with the provisions of international agreements and conventions (ADR/RID/IMDG) in the transport of dangerous cargos.

b) To provide suggestions to the facility regarding the transportation of dangerous cargos in accordance with the provisions of ADR/RID/IMDG.

c) To prepare the annual activity report of the enterprise regarding the transportation of dangerous cargos within the first three months as of the end of the year and submit it to the Administration in electronic environment.

ç) Determining the dangerous cargos to be transported and determining the requirements and compliance procedures for ADR/RID/IMDG

d) Guiding to the facility while purchasing the transportation vehicles to be used in the transportation of dangerous cargos.

e) To determine the procedures related to the control of the equipment used in the transportation, loading and unloading of dangerous cargos.

f) To provide on-the-job training to the employees of the enterprise about national and international legislation and the changes made in them and to keep the records of this training.

g) To determine the emergency procedures to be applied in case of an accident or a possible event that will affect the safety during the transportation, loading or unloading of dangerous cargos, to have employees perform drills related to these periodically and to keep their records.

ğ) To ensure that measures are taken to prevent the reoccurrence of accidents or serious violations.

h) To ensure that special conditions related to the transport of dangerous cargos are taken into account in the selection and employment of subcontractors or third parties.

ı) To ensure that employees have knowledge of operational procedures and instructions involved in the transport, loading and unloading of dangerous cargos.

i) To take measures to increase the awareness of the relevant personnel in order to be prepared for possible risks in the transportation, loading and unloading of dangerous cargos.

j) To create instructions for keeping the documents and safety equipment that should be in the vehicle during transportation according to the class of the dangerous cargos.

k) To ensure the implementation of the plan by preparing the facility security plan specified in ADR/RID/IMDG.

l) To record all kinds of work, including training, audit and control, regarding the activities, to keep these records for 5 years and to submit them to the Administration if requested.

m) To keep records by specifying the date and time of the persons and works inspected in the audits.

n) In case of any danger, to stop the work until the danger is eliminated, to start the work with its own approval when the danger is eliminated, and to notify the business or the competent authorities in writing of any stage in the process until the danger is eliminated.

o) In accordance with the provisions of ADR/RID/IMDG of the good loaded on the transport vehicle; To determine procedures for work and operations related to packaging, labeling, marking and loading.

TMGD, in the event that an accident that occurs during transportation, loading or unloading in the facility for which it is responsible causes damage to life, property and the environment; collects information about the accident and gives an accident report to the enterprise management or the Administration. This report does not replace the report that should be written by the business management within the scope of international or national legislation.

10.3 Issues Regarding Transportation of Dangerous cargos Coming to the Coastal Facility / Leaving the Coastal Facility by Road

(1) The documents to be issued by the relevant parties during the dangerous cargo transportation are as follows;

1. Dangerous Cargo Declaration
2. Dangerous cargos Shipping Waybill
3. Multi-Mode Dangerous Cargo Form
4. Dangerous Cargo Manifest
5. Packaging and Container/Vehicle Loading Certificate
6. Safety Data Sheet
7. Transport document showing exemption for carriage within the scope of ADR/RID/IMDG Code 3.4 and 3.5
8. Transport document showing exemption for carriage within the scope of ADR 1.1.3.6
9. In transports covered by ADR
a. SRC 5 certificate suitable for transport and valid
b. ADR written instruction
c. Valid and suitable for carriage Certificate of Conformity
d. Transport document
10. CSC Certificate in container transports
11. In case of using heat-treated wood in the cargo transport unit (CTU) and loading safety or transportation, a certificate indicating that the tree is suitable
12. Loading safety certificate showing that the loads in the container or vehicle are properly secured within the scope of the IMDG Code (except for loose, non-movable pieced loads and solid/liquid bulk cargoes)
13. As a result of the risk assessment of the cargo transport units arriving at the port facility and those containing harmful gas or fumigated in the cargo transport units leaving the port facility, or if the gas measurement has been made, the certificate of conformity for transportation,

(2) Dangerous cargos arriving and leaving the port facilities cannot be transported without the mandatory documents regarding the transportation listed above. Loads that are not properly secured within the scope of the IMDG Code are also treated as dangerous cargos.

Speed limits in the port area;
On main roads inside the refinery: 40km/h
In Operation Fields: 10 km/h.

10.4 Issues Regarding Carriers of Dangerous cargos Coming to / Leaving the Coastal Facility by Seaway

If a ship will participate in an operation related to the transportation or handling of dangerous cargos in the port area, a special signal tour that can be seen day and night will be used.

The reason for using the day or night signal is to inform the maritime traffic and personnel within the port area about the increased danger due to the presence and handling of dangerous cargos. The signals and signs to be used are as follows:

• Daytime: “B” flag (I am taking, unloading or carrying dangerous cargo)

• At night, strobeless red light, visible from 360°

Cold and Hot Working Methods for Ships Carrying Dangerous cargos in Port:
Ships and marine vehicles that will carry out degassing for the purpose of maintenance or repair with hot and cold processes comply with the provisions of the Regulation on Degassing in the Construction, Modification, Maintenance, Repair and Dismantling of Ships and Marine Vehicles published in the Official Gazette dated 21.12.2004 and numbered 25677.

Hot and cold maintenance works are not allowed for ships and sea vehicles carrying dangerous cargos, except in special cases, within the borders of the port facility. If hot work will be done, the hot work standard and the work permit standard are followed.

It is explained in detail in the title of “6. Operational Considerations”.

10.5 Additional Issues to be Added by the Coastal Facility

There are no additional issues to be added by the coastal facility

ANNEXES

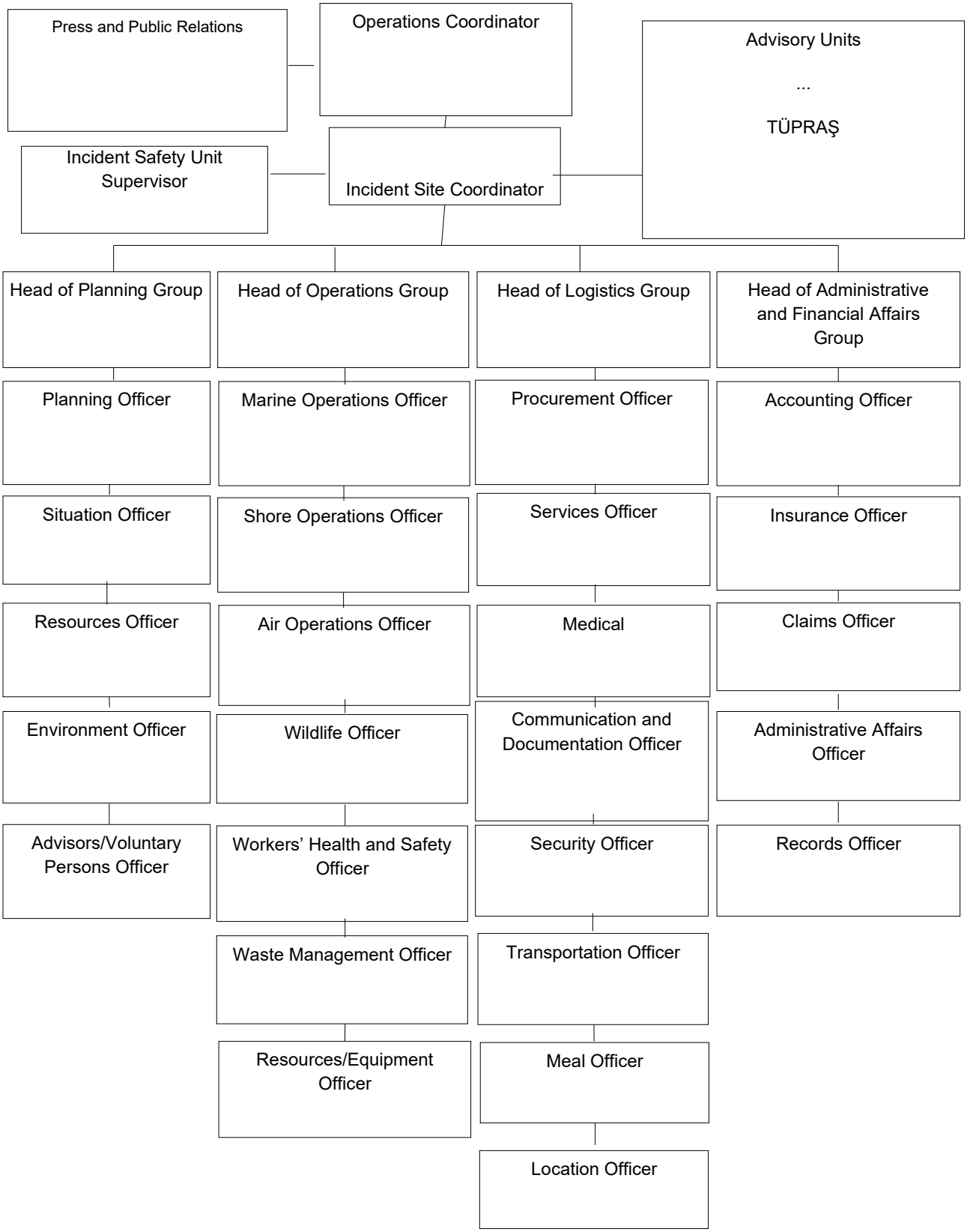
ANNEX-1 General Layout of Shore Facility

It is not requested to share with the public due to confidentiality issues. If requested by a government authority, it will be presented during the audit.

ANNEX-2 General Appearance Photos of Shore Facility

ANNEX-3 Emergency Contacts and Contact Details

Operational chart used in our facility for emergencies is given below. It is not requested to share communication details with the public due to confidentiality issues. If requested by a government authority, it will be presented during the audit.



ANNEX-4 General Layout Plan of Areas, Where Hazardous Loads are Handled

It is not requested to share with the public due to confidentiality issues. If requested by a government authority, it will be presented during the audit.

ANNEX-5 Fire Plan of Areas, Where Hazardous Loads are Handled

It is not requested to share with the public due to confidentiality issues. If requested by a government authority, it will be presented during the audit.

ANNEX-6 General Fire Plan of Facility

It is not requested to share with the public due to confidentiality issues. If requested by a government authority, it will be presented during the audit.

ANNEX-7 Contingency Plan

Firefighting Standard
PURPOSE and SCOPE

The purpose of this standard is to determine the types of possible fires in the refineries and the methods to fight with them, tasks of groups and persons that will fight with fire, and the authorities and responsibilities for notifying fire and preparing fire report.

This standard covers all workplaces and operational sites of Tüpraş and administrative buildings, social facilities and task houses of Head Office and Refineries.

DEFINITIONS

Emergency Management Center (ADYM)	The place with appropriate size, equipped with necessary and sufficient amount of documents, plans, standards, maps, sketches, materials and communication equipment in order to manage, direct and control emergency(ies) and to ensure collaboration and coordination with relevant persons and companies.
Facility	Operational sites, administrative buildings, social facilities and task houses of Tüpraş's Refineries.
First Level Firefighting Team	The team that responds to fire in accordance with the instructions of Fire Supervisor in compliance with predetermined firefighting strategy.

IMPLEMENTATION

First Response to Fire and Making the Fire Call

- Fire call number is 8888 in Tüpraş's facilities.
- There are landline phones at certain locations throughout the refinery in order for communication in case of emergency.
- Emergency phone calls are written on these landline phones within the facility.
- If person(s) that saw the fire first can extinguish the fire with existing facilities (portable fire extinguisher, fire protection water hose) without risking himself/herself, the fire is responded and if it is understood that this response is or will be insufficient with existing facilities at the fire site, a call is made regarding the fire.
- If the fire is extinguished with the first response, the burned product, fire site, how it is extinguished and other additional details are explained to site officers and Technical Safety Staff as soon as the fire is extinguished.

Making the Fire Call

- Fire calls are made by calling "8888" Fire Call hotline from the closest landline phone or by announcing through joint radio channel.
- At least following details must be provided during the fire call:
  - Name, surname and task of the calling person;
  - Location of fire;
  - If known, details of burned product and equipment, whether there is any poisonous gas in the environment or not (H2S, etc.).

    For example: I'm ……..…… (please tell your name and surname), there is fire at …… (location of fire, name of tank, unit, building and equipment and, if known type of burning product/material).*
- The notification is repeated by the Security Staff that received the call in order to prevent any misunderstanding and both parties mutually confirm that the notification is understood.
- After the fire call, the person immediately returns to the fire site and assists in fire extinguishing works.
- The Security Staff that received the fire call records name and surname of the calling person, location of fire, time of call and alert to "Fire Call Record Book".

Fire call is checked as described below:

- There are fire call phones that have parallel connection with each other in RGM, TÇM and Laboratory of Refineries.
- Technical Safety Chief Engineer calls fire call hotline "8888" everyday in order to control that fire call hotline is active and prepares monthly phone list so as to cover contractor

offices/living quarters and submits it to relevant unit supervisors. Fire call hotline is tested by calling the number everyday according to the list and these daily controls are tracked and recorded through “TPR.TEM.FRM.0128 Fire Call Hotline Monthly Control Form”. Fire Alarm Siren

- Fire alarm siren is sounded by RGM staff that received the call.
- Alarm sirens in the refinery and lodgement sites shall be sounded together during nonbusiness hours and on holidays. (There might be different practices in the refineries within business hours, based on the location of Social Facilities.)
- Fire Alarm Siren: It is in the form of a fluctuating (increasing - decreasing) sound, which will be activated twice for 30 seconds each in every 30 seconds.
- Refinery’s Security Staff that sounded the Fire Alarm siren introduces himself/herself on the central radio channel and tells the location of fire.
- Refinery’s Security Staff that learned the fire with the fire call tells the location of fire to other gates via radio or phone. Refinery’s Security Staff at the gates write the location of fire on “LOCATION OF FIRE” boards, placed on entrance and exit gates, legibly and in capital letters and opens entrance or exit gates.
- If alarm sirens are not sounded for any reason, he/she uses other communication means (radio, phone, megaphone, ambulance siren, etc.).
- When the fire is extinguished, “Fire is extinguished” announcement shall be made through the central radio channel upon instruction of Headquarters Supervisor. Refinery’s Security Staff that heard the announcement shall sound “Fire is Extinguished” siren.
- Fire is Extinguished Siren: Straight sound for 10 seconds to be sounded for once.

Fire Alarm Sirens are tested on the times as stated below:

- Sirens at the Refinery sites are sounded straight for 30 seconds at 8 am and 5 pm everyday.
- Sirens at Social Facilities are sounded straight for 30 seconds at 6.30 pm every Monday.
- “Fire Alarm Siren” and “Fire is Extinguished” siren are sounded in each fire drill.
- All failures in fire call phones and sirens are notified by Refinery Security Department to Maintenance/Engineering Department in order to ensure that they are repaired as soon as possible and it is also ensured that these phone lines and sirens are always kept functional.
- Each refinery may change testing time, based on its location.

Table 8.9.1. Table of Supervisor Vests of Emergency Response Team

Letter on Vest	Vest Color	Font Color
Senior Supervisor	White	Red
Operations Supervisor	Yellow	Orange

Fire Supervisor	Red	White
Hose Teams Supervisor	Blue	White
RAK Team Supervisor	Green	Gray
Despatcher	Orange	Gray
Traffic Organizer	Yellow	Gray

- There shall be reflective strips and the letters in specified colors and with reflective features, which indicate the relevant supervisor.

Emergency Management Center

When a fire outbreaks, Emergency Management Center (ADYM) is opened and operates in accordance with ADYM Standard, TPR.TGM.STD.0023.

If required and depending on the size of fire and agreed responding strategy, the refinery's staff, who are not at the refinery at that time and who are assigned to units as stated in Firefighting Organizational Chart, are called to duty by authorized representatives of ADYM upon a request of Headquarters Supervisor.

Authorized representatives of Emergency Management Center (ADYM) contact with Headquarters Supervisor to receive information about responding to the incident.

Headquarters

The place, through which the teams that will respond to the fire will be directed, the support needed to respond to emergency is provided and Emergency Management Center is communicated.

Representatives of units and all staff in the headquarters act in accordance with their duties and responsibilities stated in this standard.

- Organization of Headquarters is given in Firefighting Organization Chart.
- Managers of Technical Units stated in the organizational chart provides consultancy to the Headquarters Supervisor regarding the areas under their responsibility.
- Headquarters is located on a safe place by taking the growth of fire, toxic gas spreading hazards and direction of wind into consideration.
- The Headquarters Supervisor determines the location of headquarters by consulting to senior supervisor.
- After its location is determined, "Headquarters Sign" is taken by despatcher from fire brigade vehicle and placed on the location of headquarters.

Headquarters Supervisor and his/her Duties

Headquarters Supervisor is the relevant site manager. If he/she is not available the tasks of supervisor are performed in accordance with the list, given in the organizational chart.

- He/she manages the Senior Supervisor, Despatcher, Traffic Organizer, First Aid Supervisor, Fire Site Security Supervisor and Supporting Teams together with the Managers of Technical Units that provide consultancy services to him/her.
- He/she ensures coordination with ADYM regarding intervening to incident site and requirements.

Senior Supervisor and his/her Duties

Senior Supervisor is the Superintendent/Coordinator of relevant site. If he/she is not available the tasks of supervisor are performed in accordance with the list, given in the organizational chart.

- He/she determines the strategy to respond to the emergency together with Operations Supervisor, Fire Supervisor and RAK Team Supervisor that are reporting to him/her and he/she manages fire, rescue and unit operations.
- He/she ensures coordination with Headquarters Supervisor regarding intervening to incident site and requirements.
- He/she wears the white vest, on which it is written “Senior Supervisor”.
- He/she requests materials, staff, tools and equipment, which might be needed in accordance with the strategy to respond to emergency, from Headquarters Supervisor.

Operations Supervisor and his/her Duties

Operations Supervisor is the relevant Unit/Site Chief. If he/she is not available the tasks of supervisor are performed in accordance with the list, given in the organizational chart.

- He/she manages the unit’s operations together with the unit/site staff reporting to him/her.
- He/she ensures coordination with Senior Supervisor regarding operational responding requirements.
- He/she is responsible to operate, halt and protect the unit/site from fire in acordance with the directives of Senior Supervisor.
- He/she wears the yellow vest, on which it is written “Operations Supervisor”.

Fire Supervisor and his/her Duties

Fire Supervisor is Technical Safety Superintendent. If he/she is not available the tasks of supervisor are performed in accordance with the list, given in the organizational chart.

- He/she manages the operations for responding the fire together with the staff reporting to him/her.

- He/she ensures coordination with Operations Supervisor regarding operational responding requirements.
- He/she manages the hose teams and firefighting staff in accordance with the directives of Senior Supervisor and determined firefighting strategy.
- He/she wears the red vest, on which it is written “Fire Supervisor”.

Duties of Workers’ Health and Safety (WHS) Superintendent

- He/she directs Workers’ Health and Safety staff to the site to be measured in order to conduct gas measurements at the incident site and informs Fire Supervisor about current condition.
- He/she identifies necessary safe zones and ensures that zones, which must not be entered, are barricaded.
- He/she provides the support of WHS staff for First Level Firefighting Team.

Supervisor of Hose Teams and his/her Duties

Supervisor of Hose Teams is either Maintenance Superintendent/Chief/Engineer, responsible for the relevant unit/site, who will be assigned by Maintenance/Engineering Manager.

- He/she ensures that the staff of Maintenance Department and KSM, who will form the hose teams, are ready at the headquarters with their firefighting equipment.
- He/she manages replacement of firefighting team in accordance with directives of Fire Supervisor.
- He/she is responsible for cleaning and collecting the firefighting eqipment together with firefighting staff after the fire is extinguished.
- He/she wears the blue vest, on which it is written “Supervisor of Hose Teams”.

First Level Firefighting Team

First Level Firefighting Team performs the operations to respond the fire in accordance with the instructions of Fire Supervisor in compliance with predetermined firefighting strategy.

Refinery Search & Rescue (RAK) Team Supervisor

RAK Team Supervisor is the staff, selected by Refinery Security Department.

He/she manages RAK Team in accordance with the instructions to be given by Senior Supervisor and the determined rescue strategy. He/she manages the actions of RAK team in accordance with TPR.TGM.STD.0135 Search & Rescue Standard.

Dispatcher and his/her Duties

Dispatchers, … Chiefs and Engineers.

One staff is assigned for each of Headquarters Supervisor, Senior Supervisor, Operations Supervisor, Fire Supervisor and RAK Team Supervisor.

- They are responsible for delivering the information and instructions to be given by Senior Supervisor, Operations Supervisor, Fire Supervisor and RAK Team Supervisor accurately to relevant addressees.
- Dispatchers wear the vests available in fire brigade vehicle, on which it is written “DESPATCHER” and they take the sign of Headquarters from the fire vehicle and place it on the site to be selected by Headquarters Supervisor.
- Vests of supervisors are taken by dispatchers from fire brigade vehicle and delivered to the applicable supervisor.
- In case the radio communication has any problem, they take megaphones of supervisors from the fire brigade vehicle and carry them for supervisors as long as the fire is being responded.

Traffic Organizer and his/her Duties

… Manager assigns enough number of staff as traffic organizer in accordance with the directives of Headquarters Supervisor in order to take entrances to fire site and firefighting site under control.

Traffic Organizers are Chiefs / Engineers / Technicians of ....

- Locations, at which a traffic organizer shall be assigned, are determined in accordance with the results of gas measurements to be conducted by Workers’ Health and Safety (WHS) Superintendent / Chief / Engineer and the routes to responding site and Headquarters Supervisor is asked to assign traffic organizers.
- Traffic organizers wear yellow colored vests, available in their vehicles or fire brigade vehicle, on which it is written “TRAFFIC ORGANIZER” and they stay at their posts.
- Traffic organizers are responsible to manage the traffic at the fire site, to show parking area for arriving vehicles and to keep the roads at the fire site always open.

First Aid Team Supervisor

First Aid Team Supervisor is the Workplace Physician on duty. If he/she is not available the tasks of supervisor are performed in accordance with the list, given in the organizational chart.

- He/she is positioned at a safe zone on the incident site with the ambulance and manages first aid and healthcare operations.

Fire Site Security Supervisor and his/her Duties

Fire Site Security Supervisor is the Refinery's Security Supervisor. If he/she is not available the tasks of supervisor are performed in accordance with the list, given in the organizational chart.

- He/she ensures security at the site and in the refinery by reporting to Headquarters Supervisor.

Support Team

The staff listed in Firefighting Organizational Chart (Annex-9) stays at the headquarters as support team.

- They join and support the firefighting team based on their duties and area of responsibility.

Fire Investigation Report

A Fire Investigation Report (TPR.TEM.FRM.0011) is prepared for all fires occurred within Tüpraş's facilities.

The fire investigation report is prepared and signed by the staff of Technical Safety Department after investigating the incident site together with relevant site officer. After the report is signed, it is submitted to relevant unit supervisors of the refinery and Technical Safety Department in Head Office via e-mail. Fire Investigation Report is archived in TÇM.

Fire Investigation Report is uploaded to Incident Investigation System by relevant superintendent/coordinator of the site.

GENERAL FIREFIGHTING RULES

- It is FORBIDDEN to park vehicles and stack materials in front of of in a manner to obstruct utilization of fire hydrants and emergency responding equipment within Tüpraş's facilities. Emergency responding vehicle must always be accessible and ready to use.
- When fire alarm is sounded all staff must move to their assignment locations as stated in this standard. Contractors, visitors and interns stop to work in a safely manner and move to Assembly Points.
- If sirens of firefighting and emergency responding vehicles (fire brigade, ambulance, RAK Team's vehicle, etc.) are sounding, these vehicles have the priority to pass.
- All staff must know the location of and how to use firefighting equipment at their site/building and if they see any empty or malfunctioning fire extinguishing equipment, they must inform Technical Safety and Environment Department (TÇM) to ensure that they are refilled/repaired.
- All staff must know the locations of underground channels and storm drains as well as their entrances and ventilation locations of storm drains. Gaskets of vents, storm drain covers

and field drain systems must be checked, choked vents must be cleaned and damaged drain covers and gaskets must be repaired.

- All staff must know the locations of fire hydrants and circuit breaker valves at their sites.
- Any staff, who is not assigned for firefighting, must act in a manner so as not to obstruct vehicle traffic, stay away from the fire site and must not use their radios and phones unless necessary during the fire.

Measures

Precautions on Electricity Installation

- Devices, that cannot be served by the electricity installation due to its design capacity, must not be used.
- Electricity cables that lost their integrity (extended, damaged isolation, etc.) and have not been controlled shall not be used.
- Maintenance, repairing and controls of electrical and electronic devices shall be made by trained and qualified staff and unauthorized persons shall not intervene.
- Plugs of electrical devices, which were not designed to be left on the socket, shall not be left on the socket after they were used.

Precautions to be Taken in Offices

- Flammable and combustible materials, such as gasoline, spirit, gasoil and fuel oil shall not be used in offices.
- Employees shall close, if open, the windows, check the fire office for fire and safety, and switch off the lights before they leave the office at the end of business hours.

Other Precautions to be Taken

- Matches, lighters, etc. shall never be kept and used for any reason when supplying fuel and checking the lubricants of motorized vehicles.
- There shall not be any good or combustible and flammable material on the roof other than those required for protection from fire. It is not allowed to climb to, smoke at and use fire causing equipment at the roofs.
- Fire Call and Responding Instructions (Annex-2), prepared for refineries, are kept at places visible to all staff within the building and it that they are kept updated by TÇM Departments.
- The instructions to use fire extinguishing equipment within buildings are hung on same places.
- Plans that show emergency exit doors and fire extinguishing equipment shall be hung on appropriate locations of the halls of administrative buildings within Head Office and Refinery Departments.
- Combustible, flammable and explosive materials shall not be kept at places, such as boiler room, tea house, etc.

General Information on Fire

Burning is a chemical reaction resulting from combination of combustible materials with oxygen in certain ratios under heat.

Following elements must combine together in order to start fire:

1. Fuel :Combustible and flammable materials

2. Oxygen:The natural element that forms 21% of atmosphere

3. Ignition Source:The source that starts burning

4. Chemical Chain Reaction :The reaction that causes the fire to continue.

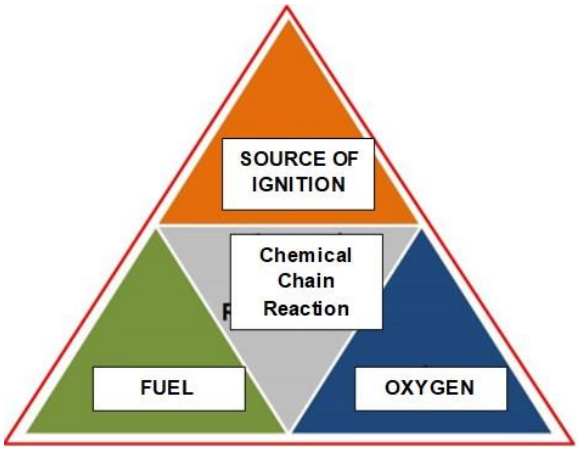


Figure 8.9.1 Triangle of burning

It is explained with the state of burning, triangle of burning. A fire does not occur if any of above does not exist. The combustible material and ignition source or oxygen must be kept away from each other in order to prevent fire. It is also needed to eliminate one or two of these elements in order to prevent or distinguish fire. The safety against fire is based on this principle.

Reasons of Fire

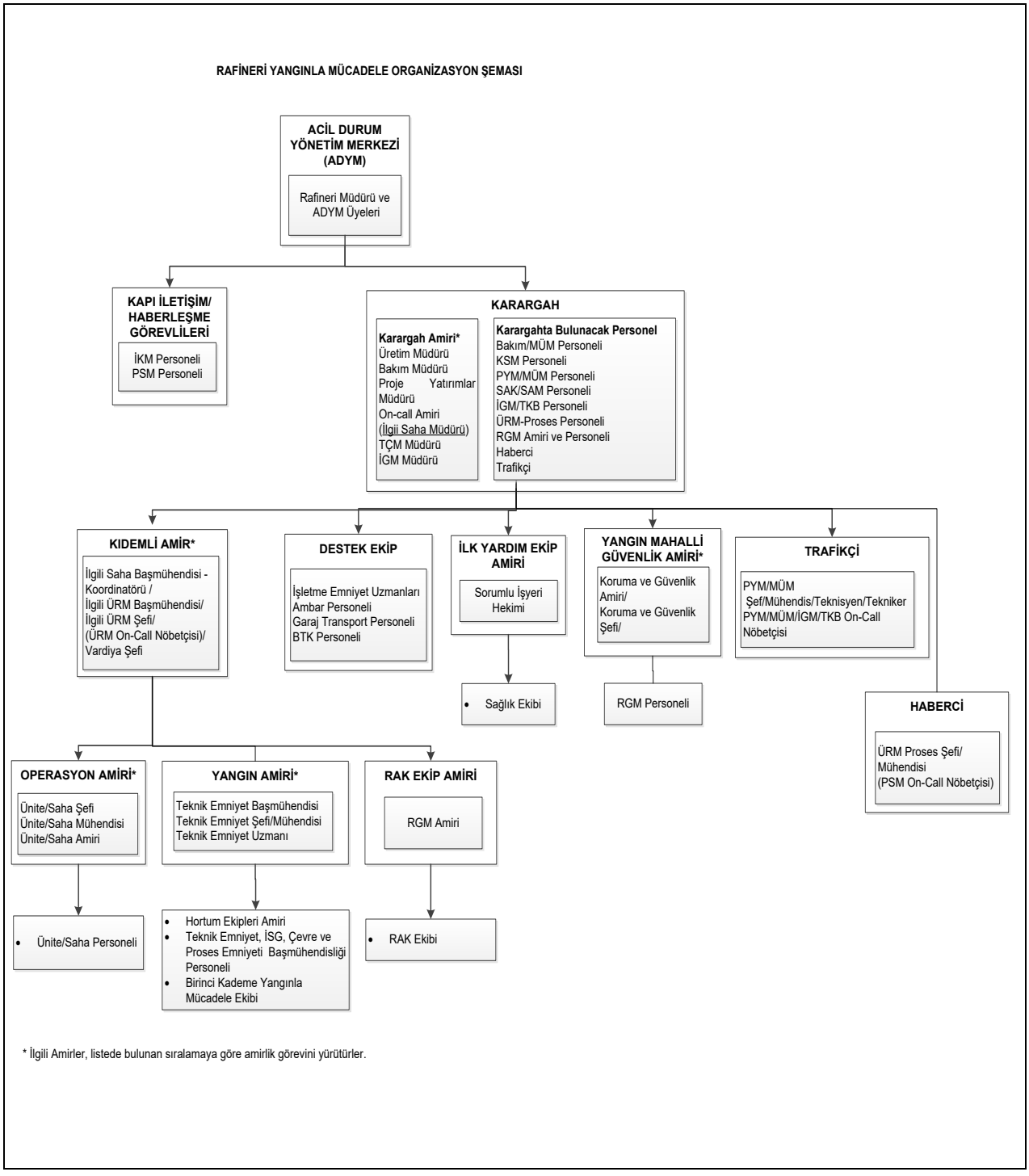
General reasons of fire:

- Failure to comply with bylaws, regulations and circulars on protection from fire;
- Lack of knowledge and training in protection from and extinguishing fire;
- Negligence, lack of measures, carelessness and intentional actions of staff;
- Sabotage;
- Accidents and fires with external origin;
- Natural disasters;
- Nonconformity of electricity and heating standards of facilities with standards, insufficiency of fire protection water systems, failure to know and comply with utilization instructions of firefighting equipment.

ANNEX-8 Emergency Assembly Locations

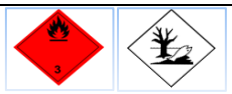
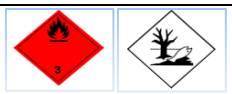
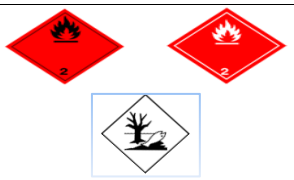
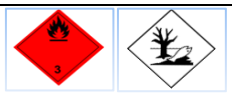
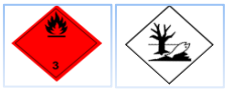
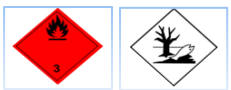
It is not requested to share with the public due to confidentiality issues. If requested by a government authority, it will be presented during the audit.

ANNEX-9 Emergency Management Diagram



ANNEX-10 Dangerous Cargo Manual

The list of Dangerous Cargo handled in our facility through the sea is given below.

PRODUCT NAME	UN CODE	CLASS	Markings	Packaging Group
Diesel	UN 1202	3		PG III
Unleaded Gasoline	UN 1203	3		PG II
LPG	UN 1965	2		
Jet A-1	UN 1863	3		PG III
Vacuum Residue	UN 3257	9		PG III
Fuel Oil	UN 3082	9		PG III
Naphtha	UN 1268	3		PG I
Isomerate	UN 1268	3		PG II

Platformate	UN 1268	3		PG I
HVGO	UN 3082	9		PG III
Hc.Dip	UN 3082	9		PG III
MTBE	UN 2398	3		PG II
Crude Oil	UN 1267	3		PG III

Propane - Propylene	UN 1965	2		
Solid Sulphur	UN1350			PG III

Separation of Dangerous Cargo, which are handled in our shore facility, within the ship and our facility in accordance with their classes is given below.

CLASS	1.1 1.2 1.5	1.3 1.6	1.4	2.1	2.2	2.3	3	4.1	4.2	4.3	5.1	5.2	6.1	6.2	7	8	9
Combustible Gases 2.1	4	4	2	X	X	X	2	1	2	X	2	2	X	4	2	1	X
Inflammable Liquids 3	4	4	2	2	1	2	X	X	2	1	2	2	X	3	2	X	X
Various Hazardous Substances 9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Numbers and symbols used in the table have the following meanings:

1– “Must be kept away”;

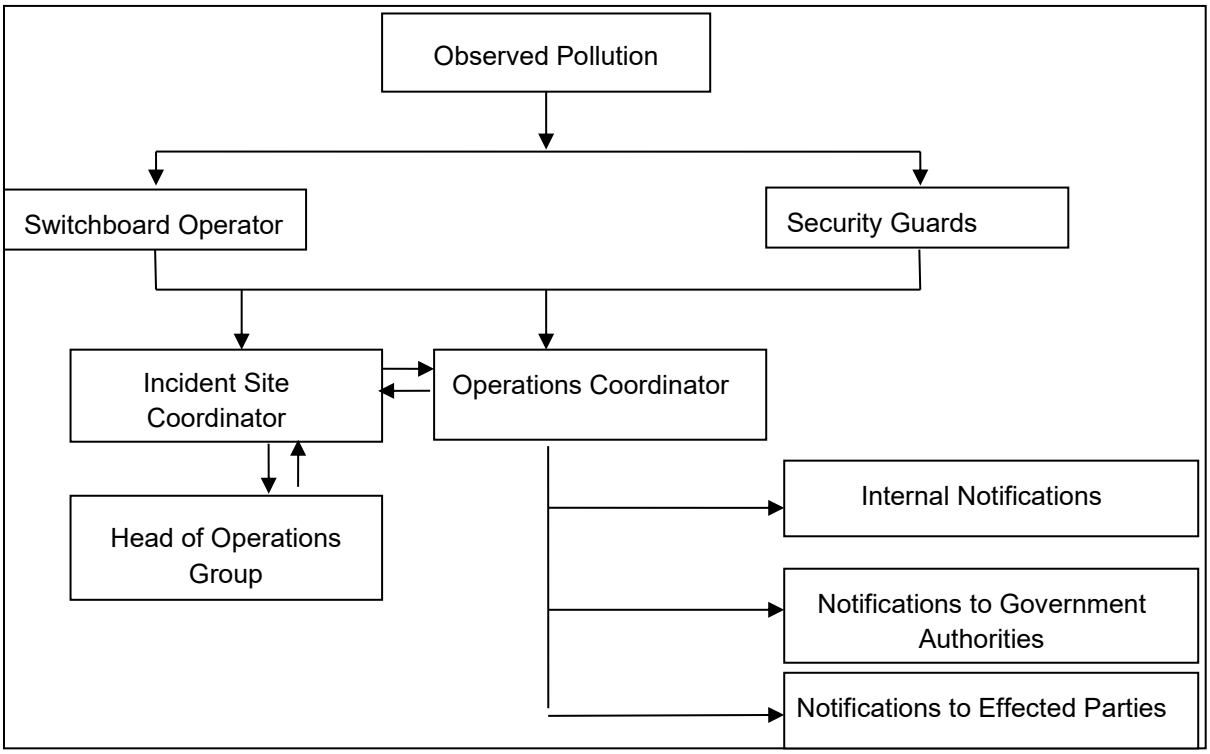
2– “Must be separated”;

3– “Must be kept separated through an entire compartment or section”;

4– “Must be separated longitudinally through an intervening compartment or section”

X- “There is not any interaction”

Emergency situations that might be caused by Dangerous Cargo in our facility are fire and environmental pollution, based on their classes. Emergency flow diagrams for these incidents are given below.



FIRE CALL AND INTERVENING INSTRUCTION

What to do in case of fire

1- If you can respond safely without taking any risk, respond the fire with existing extinguishers.

2- Access the closest fire alert button and press it.

3- Call 8888 to notify the fire and provide location and status of fire to authorities.

4- In case of fire, follow emergency exit directions and go to the closest assembly point.

WHEN YOU HEARD THE FIRE ALERT

5- Follow emergency exit directions and go to the closest assembly point.

6- Building Evacuation Officer will check whether anyone is left in the building or not.

7- Do not use elevators.

Close the doors and windows when leaving the rooms.

Never enter the building again without permission of Senior Supervisor

1- Product flow is stopped. Loading arm is separated from the tanker.

2- Cooling water is applied to the area of cargo tanks of the tanker in order for cooling purposes.

3- Fires at the ship manifolds are extinguished with high pressurized water mist or by using dry chemical powdered extinguishers.

4- If the ship's tanks are ruptured as a result of an explosion, foam is applied to the ruptured part, depending on the type of product.

5- Pier loading and unloading area are protected with water monitors.

6- If possible, the ship is removed from the pier zone to a safe area.

ANNEX-11 Leakage Areas and Equipment for CTU and Packages, Entrance/Exit Drawings

Only bulk liquid cargos are handled at Tüpraş Izmit Refinery Port as hazardous substance.

ANNEX-12 Inventory of Port Service Ships

Marine Vehicle	Vehicle Name	Length (m)	Width (m)	Engine Power (BHP)	Ship ID
Tugboat	T. DAMLA 1	32,79	10,5	5000	9438688
	T. DAMLA 2	32,79	10,5	5000	9438705
	BEYAZIT GÜNİÇEN	33	9,25	2720	8705096
	HASAN TURAL	33	9,25	2720	8705084
	T.Damla 3	32,7	10,5	5000	9438119
	İZMİR RAFİNERİSİ-IV	33	9,25	2720	8417417
Mooring Boat	T. SERVİS 1	14,95	4,95	1500	2095532
	BEŞİR ALP	12,2	4	412	1529714
	T.PALAMAR 3	10,1	3,9	196	2101208
	T.PALAMAR 4	10,1	3,9	196	2108234
	T.PALAMAR 5	10,3	3,9	196	2115691

ANNEX-13 Marine coordinates of Administrative Borders of Kocaeli Region Port Office, anchoring locations and harbour pilot embarking/disembarking locations

KOCAELİ PORT AUTHORITY (Amended title:Official Gazette-6/8/2013-28730)
A) (Amended:Official Gazette-8/4/2017-30032) Administrative site borders of the port
Administrative site of the port of Kocaeli Region Port Authority is the area on the shore and within the sea surrounded by the below coordinates.

a) 40º 48´ 37" N – 029º 20´ 24" E (Kocaeli-İstanbul Province Border)
b) 40º 46´ 59" N – 029º 19´ 00" E
c) 40º 43´ 27" N – 029º 19´ 00" E
d) 40º 43´ 30" N – 029º 21' 18" E
e) 40° 43' 00" N – 029° 21' 18" E
f) 40° 43' 00" N – 029° 23' 24" E
g) 40° 44' 57" N – 029° 30' 57" E
h) 40° 44' 48" N – 029° 32' 30" E
ı) 40° 41' 12" N – 029° 33' 36" E

B) Anchoring sites
a) Izmit anchoring site: Anchoring site of ships not carrying hazardous substance is the area, coordinates of which are given below.

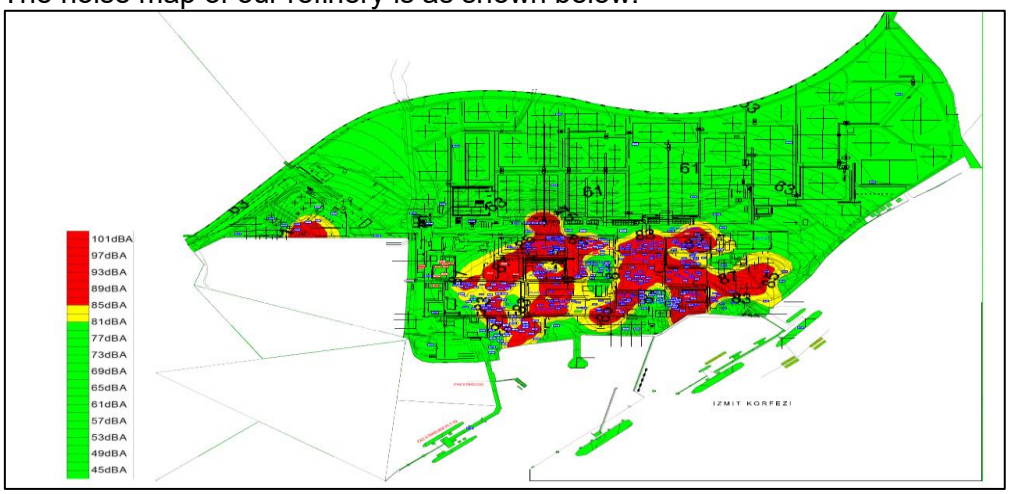
1) 40° 45' 00" N – 029° 52' 48" E
2) 40° 44' 00" N – 029° 52' 48" E
3) 40° 44' 00" N – 029° 55' 00" E
4) 40° 45' 00" N – 029° 55' 00" E
b) Yarımca anchoring site: Ships that are carrying hazardous substance, military ships operating with nuclear power and quarantine anchoring site is the area, coordinates of which are given below.
1) 40° 46' 24" N – 029° 41' 00" E
2) 40° 45' 09" N – 029° 41' 00" E
3) 40° 44' 54" N – 029° 43' 00" E
4) 40° 46' 18" N – 029° 43' 00" E
c) Hereke anchoring site: Anchoring site of ships not carrying hazardous substance is the area, coordinates of which are given below.
1) 40° 46' 36" N – 029° 38' 09" E
2) 40° 45' 24" N – 029° 38' 09" E
3) 40° 45' 12" N – 029° 40' 30" E
4) 40° 46' 27" N – 029° 40' 30" E
ç) Eskihisar anchoring site: Anchoring site of ships not carrying hazardous substance is the sea area between the line that combine below coordinates and the shore on the north of this line. No anchoring can be made within 2.5 gomino from the shore within this site.
1) 40º 45' 12" N – 029º 23´ 27" E (Darıca Cape)
2) 40º 46' 00" N – 029º 30´ 57" E (Kaba Cape)

ANNEX-14 Equipment for Fighting Against Marine Pollution

- Inflatable, solid or fence barriers
- Oil scraper equipment;
- Oil or chemical absorbing barriers;
- Oil or chemical absorbing pads or absorbents;
- Impermeable waste storage barrels and neoprene tanks;
- Response boat and tugboats;
- Pressurized water cleaning equipment;

ANNEX-15 Map of Use of Personal Protectors

We have a Protective Clothes and Equipment Standard effective in our refinery, which must be followed by all staff. According to this standard, all persons that will work at the refinery site must wear Hard Hat, Work Clothes, Work Gloves, Safety Shoes/Boots and Goggles. Since this rule is effective for the entire refinery, we do not have any PPE map. However a noise map is prepared by measuring only the noise and the locations, at where the noise is 85 dB and more, are identified by lines and it is required to use ear protectors when entering these areas. The noise map of our refinery is as shown below.



ANNEX-16 Hazardous Substance Incident Notification Form

STATUS REPORT

FROM: TÜRKİYE PETROL RAFİNERİLERİ A.Ş. IZMİT REFINERY

TO: The Ministry of Environment, Urbanisation and Climate Change of the Republic of Turkey

The Ministry of Transport and Infrastructure of the Republic of Turkey

Main Search, Rescue & Coordination Center

Kocaeli Region Port Authority

1. CURRENT SITUATION

a. Details of Ship or Facility

- Ship's name:
- IMO no.:
- Port and country of flag:
- Ship's type:
- Other details of ship and facility:

b. Status:

c. Reporting Time:

ç. Incident Description:

d. Current Condition of Pollution

e. Current and Forecasted Weather:

2. APPLIED RESPONSES and RESPONSE PLANS:

3. NEEDED RESOURCES and RECOMMENDED MEASURES:

4. TIME OF SUBMISSION OF NEXT STATUS REPORT:

5. OTHER DETAILS:

ANNEX-17 Notification Form for Control Results of Hazardous Cargo Transportation Units (CTUs).

There is no cargo transportation at the Tüpraş İzmit Refinery Port.