

ก. การวิเคราะห์ผลกระทบสิ่งแวดล้อมทางสุขภาพสำหรับโครงการพัฒนาท่าอากาศยาน  
แห่งปลาทองระยะที่ 2



ภาคผนวก ก

การวิเคราะห์ผลกระทบสิ่งแวดล้อมทางสุขภาพสำหรับ  
โครงการพัฒนาน้ำมันดิบแหล่งปลาทองระยะที่ 2

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ภาคผนวก ก1

ตัวชี้วัดด้านสุขภาพขององค์การอนามัยโลก

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## WORLD HEALTH ORGANIZATION DETERMINANTS OF HEALTH INCLUDE:

1. Income and social status - higher income and social status are linked to better health. The greater the gap between the richest and poorest people, the greater the differences in health.
2. Education – low education levels are linked with poor health, more stress and lower self-confidence.
3. Physical environment – safe water and clean air, healthy workplaces, safe houses, communities and roads all contribute to good health. Employment and working conditions – people in employment are healthier, particularly those who have more control over their working conditions.
4. Social support networks – greater support from families, friends and communities is linked to better health. Culture - customs and traditions, and the beliefs of the family and community all affect health.
5. Genetics - inheritance plays a part in determining lifespan, healthiness and the likelihood of developing certain illnesses. Personal behavior and coping skills – balanced eating, keeping active, smoking, drinking, and how we deal with life’s stresses and challenges all affect health.
6. Health services - access and use of services that prevent and treat disease influences health
7. Gender - Men and women suffer from different types of diseases at different ages.





ภาคผนวก ก2

สถิติการเจ็บป่วยของผู้ป่วยนอกในจังหวัดสงขลา สุราษฎร์ธานี

และเกาะสมุย

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<b>Percentage of out-patients in Surat Thani according to 21 groups of causes from Health Service Units, Ministry of Public Health, from 1998 to 2002</b>					
	1998	1999	2000	2001	2002
Certain Infectious and parasitic diseases	8.4	8.3	9.1	10.4	13.8
Neoplasms	0.4	0.5	0.6	0.7	0.9
Diseases of the blood and blood forming organs and certain disorders involving the immune system	0.4	0.6	0.7	0.6	0.9
Endocrine, nutritional and metabolic diseases	4.0	5.4	6.4	7.9	16.9
Mental and behavioral disorders	5.0	6.8	6.9	7.6	8.2
Diseases of the nervous system	2.5	3.4	3.4	3.8	4.3
Diseases of the eye and adnexa	3.4	4.2	4.8	5.3	6.7
Diseases of the ear and mastoid process	1.7	2.3	2.1	2.1	2.3
Diseases of the circulatory system	5.1	7.5	8.9	10.8	13.4
Diseases of the respiratory system	42.3	49.9	53.9	58.1	56.8
Diseases of the digestive system	16.6	20.0	22.3	23.5	23.0
Diseases of the skin and subcutaneous tissue	8.6	11.1	12.4	12.4	11.8
Diseases of the musculoskeletal system and connective tissue	9.5	12.5	14.0	15.6	16.9
Diseases of the genitourinary system	3.5	4.3	5.0	5.4	5.7
Complication of pregnancy, childbirth and puerperium	1.8	1.5	2.0	1.7	2.4
Certain conditions originating in the perinatal period	0.1	0.1	0.1	0.1	0.1
Congenital malformations, deformations and chromosomal abnormalities	0.1	0.1	0.1	0.2	0.2
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	13.0	15.8	16.9	19.5	25.7
Poisoning, toxic effect, and their sequelae	0.3	0.5	0.4	0.4	0.3
Transport accidents and their sequelae	2.3	2.4	2.9	2.8	2.8
Other external causes of morbidity and mortality	7.8	8.7	8.9	8.9	8.5

<b>Percentage of out-patients in Songkhla according to 21 groups of causes from Health Service Units, Ministry of Public Health, from 1998 to 2002</b>					
	1998	1999	2000	2001	2002
Certain Infectious and parasitic diseases	8.24	6.87	8.25	9.52	9.69
Neoplasms	0.73	0.82	0.95	0.89	1.00
Diseases of the blood and blood forming organs and certain disorders involving the immune system	0.33	0.41	0.48	1.55	0.61
Endocrine, nutritional and metabolic diseases	4.77	5.27	5.75	6.84	7.17
Mental and behavioral disorders	7.73	7.68	6.51	4.87	3.88
Diseases of the nervous system	2.30	2.80	3.07	2.90	2.79
Diseases of the eye and adnexa	3.79	3.31	3.78	5.62	5.66
Diseases of the ear and mastoid process	1.77	1.68	2.15	2.14	2.15
Diseases of the circulatory system	7.01	8.05	9.79	12.09	12.56
Diseases of the respiratory system	37.97	38.64	40.53	48.65	44.92
Diseases of the digestive system	17.48	18.55	19.97	24.25	23.06
Diseases of the skin and subcutaneous tissue	10.20	10.13	12.00	12.89	12.64
Diseases of the musculoskeletal system and connective tissue	9.18	8.66	10.73	11.45	12.48
Diseases of the genitourinary system	3.74	4.07	3.94	4.14	4.45
Complication of pregnancy, childbirth and puerperium	0.98	1.04	1.18	1.20	1.08
Certain conditions originating in the perinatal period	0.12	0.12	0.06	0.07	0.09
Congenital malformations, deformations and chromosomal abnormalities	0.36	0.25	0.31	0.37	0.43
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	9.48	8.51	10.06	11.53	11.92
Poisoning, toxic effect, and their sequelae	0.34	0.29	0.34	0.40	1.08
Transport accidents and their sequelae	3.15	2.79	3.17	3.52	3.24
Other external causes of morbidity and mortality	9.74	8.06	9.20	11.05	11.20

Percentage of out-patients in Amphoe Ko Samui according to 21 groups of causes from Surat Thani Health Service Office, in 2002	
	2002
Certain Infectious and parasitic diseases	17.22
Neoplasms	0.62
Diseases of the blood and blood forming organs and certain disorders involving the immune system	0.99
Endocrine, nutritional and metabolic diseases	13.37
Mental and behavioral disorders	3.64
Diseases of the nervous system	4.11
Diseases of the eye and adnexa	6.39
Diseases of the ear and mastoid process	3.93
Diseases of the circulatory system	20.08
Diseases of the respiratory system	50.57
Diseases of the digestive system	23.20
Diseases of the skin and subcutaneous tissue	11.01
Diseases of the musculoskeletal system and connective tissue	18.28
Diseases of the genitourinary system	6.00
Complication of pregnancy, childbirth and puerperium	0.37
Certain conditions originating in the perinatal period	0.04
Congenital malformations, deformations and chromosomal abnormalities	0.12
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	20.64
Poisoning, toxic effect, and their sequelae	0.35
Transport accidents and their sequelae	4.78
Other external causes of morbidity and mortality	12.43

ภาคผนวก ก3

ลักษณะของสารมลพิษทางอากาศ

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**VOLATILE ORGANIC COMPOUNDS (VOC):** Volatile organic compounds are organic chemicals that easily vaporize at room temperature. VOCs have no color, smell, or taste and include a wide range of individual substances, such as hydrocarbons (for example benzene and toluene), halocarbons and oxygenates. Hydrocarbon VOCs are usually grouped into methane and other non-methane VOCs. Methane is an important component of VOCs, its environmental impact principally related to its contribution to global warming and to the production of ground level or lower atmosphere ozone.

**NITROGEN OXIDES (NO<sub>x</sub>):** Nitrogen and oxygen react to form various nitrogen oxides under high pressure and temperature in vehicle engines. Nitrogen oxides, like hydrocarbons, are precursors to the formation of ozone. Concern with nitric oxide relates to its transformation to nitrogen dioxide and its role in the formation of photochemical smog. Nitrogen dioxide has been reported to effect the respiratory functions, irritate eyes and nose, stunt plant growth, corrode metals and contribute to acid rain<sup>1</sup>.

**SULFUR DIOXIDE (SO<sub>2</sub>):** SO<sub>2</sub> is known to cause breathing problems and is involved in the formation of acid rain.

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<sup>1</sup> Acid rain is typically formed from nitrogen and sulfur oxides combined with water vapor in the atmosphere.





ภาคผนวก ก4

ตัวชี้วัดด้านสุขภาพของบริษัทยาโนแคลไทยแลนด์จำกัด

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Proactive Indicators	Reactive Indicators
<p>Industrial Health Compliance Health Hazard Analysis – HHA Industrial Hygiene Monitoring</p> <p>Compliance with Hygiene Standard Planned Hygiene Inspections Food contamination Screening Planned Offshore Pest Control Activities Planned Good Practice Meetings with Caterers Planned Remote Platform Inspections Planned Potable Water Analyses</p> <p>Medical Surveillance Planned Benzene Surveillance Planned Mercury Surveillance Planned Crane vision Screening Tests Planned Lung function Tests for Respiratory Protection Planned Hearing Tests</p> <p><b>Substance Abuse</b> Urine Tests BAC Tests</p> <p><b>Health Related Training</b> Planned GO-HES Medical Topics Planned Specific Occupational Health Courses</p> <p><b>Health Promotion Activities</b> Planned Posters Planned Newsletters (Better Life) Planned Exhibitions</p> <p><b>Physical Examinations</b> Offshore Mandatory Physical Examinations Voluntary Physical Examinations</p> <p><b>Emergency Preparedness</b> Planned Offshore First Aid Refresher Courses Planned Onshore First Aid Courses Planned First Assist Team Training Planned Emergency Exercises</p> <p><b>Wellness an Health for Individual Promotion Program (WHIP)</b> Weight Reduction/Nutrition Program Heart Care Program Liver Care Program Fitness an Exercise Program National Employee Assistance Program (NEAP) Colorectal Cancer Screening Program</p> <p><b>Community Health Outreach Program</b> Blood Donation Campaign (unit/campaign) Public first Aid/Health Education Program</p>	<p>Non-Occupational Illnesses Upper Respiratory Tract Infections Occupational Illness Chemical dermatitis Back Injury causes by improper lifting technique.</p> <p>Referral Data Dental infections</p>

ภาคผนวก ก5

แผนรองรับเหตุฉุกเฉินของบริษัทยูโนแคลไทยแลนด์ จำกัด



## 1.0 INTRODUCTION

Unocal Thailand has prepared Emergency Procedures and manuals that describe the procedures for onshore and offshore operations. Separate and facility-specific Emergency Procedures have been developed for each area of operation or facility of Unocal's activities. Emergency Procedure Manuals have been prepared for facilities in:

- Bangkok.
- Songkhla.
- Erawan Floating Storage and Off-loading tanker.
- Emergency Procedure Manuals have also been prepared for specific activities that occur on different facilities. These include:
  - Offshore Drilling.
  - Offshore Production.
  - Construction Onshore and Offshore.

## 2.0 EMERGENCY PLANNING

The categories covered by the Emergency Procedures include:

- Fire/Explosion.
- Well Problem/Blowout.
- Leak/Spill/Hazmat.
- Medical/Missing Person/Man Overboard.
- Aircraft/Vessel Incident.
- Collision/Interference By Shipping.
- Bomb Threat/Civil Disorder.
- Abnormal Weather/Natural Disaster.
- Equipment/Structural Failure.
- Facility Evacuation.

Unocal Thailand Emergency Procedures provide for the following:

1. Emergency Equipment Layout Diagram

This is a prominently displayed poster (wall mounted) having a diagram in plan view of the work area or facility, showing its boundaries and subdivide areas along with escape routes from each. It also shows the location of emergency and personal protection equipment along with indicating the types and areas with hazards.

2. Emergency Station Bill

The Emergency Station Bill is a prominently displayed poster (wall mounted) indicating methods by which emergencies are announced and detailing the actions and emergency duties of each person, along with where visitors should report when an emergency occurs.

3. Command Point

The Command Point is the designated location equipped to handle the logistics and coordination of an emergency. This is the radio/telephone equipped emergency station for the OIM/Drillsite Manager or “Person In Charge” and must have available an Emergency Procedures Manual and other emergency references and resources.

4. Site Specific Emergency Procedures Manual

This is the manual for the specific field/facility or operation that contains the preplanned Emergency Checklist for the Unocal Thailand Emergency Organization formed by the staff along with details on training, communications, external notification, and resources.

5. Bangkok Emergency Control Center

The Emergency Control Center is the Bangkok SCB (East) Conference Room 351 which is equipped to handle the logistics and coordination of an emergency from a remote position. Using the Bangkok Office will allow the normal staff to utilize their normal resources to support the emergency and expedite decisions.

6. Bangkok Family Information Center (FIC)

When considered necessary, the Family Information Center is set up and manned in the Bangkok Office SCB (East) Conference Room 301 to provide information and answer questions from families and employees during an emergency. A recorded message may be used

to provide initial information and when necessary, personnel will answer and provide “live” information and log caller requests. Separate FIC Procedures Manuals are provided for the operation of the FIC.

7. Bangkok Emergency Control Center Emergency Procedures Manual

This is the manual for the personnel of the Bangkok Emergency Control Center. It contains the preplanned Emergency Checklists for the Unocal Thailand Emergency Support Organization formed by the Bangkok staff along with details on training, communications, external notification, aid and resources.

8. Manned 24 Hour Call Out Centers

This is the Bangkok and alternatively the Songkhla Radio Rooms that are manned 24 hours per day with personnel to handle the requests and any necessary call outs of Duty or Emergency Support Personnel.

9. Emergency Duty Roster

This is a predesignated assignment list of Unocal Thailand Duty Personnel charged with supporting and coordinating an emergency, they are "on 24 hour call" and are provided with pagers and cellular phones. This list is issued weekly and assigns a person and an alternate to, "on-call status" from the Asset Teams, Drilling, Logistics and other departments as required.

10. Songkhla Emergency Support Center

The Songkhla Emergency Support Center will be established if deemed necessary at the Unocal Thailand Songkhla Production Warehouse when and if necessary additional staff from Bangkok will be provided. This will be done so that resident Songkhla Personnel can be relieved to perform their normal duties and utilize their normal resources to support the emergency.

11. Remobilization Coordinators

Remobilization Coordinators will be assigned and will work at Songkhla or at a remote location if necessary. The Remobilization Coordinators handle the arrangements necessary for receiving, housing and scheduling the return to work of persons during and after an evacuation.

## 12. Songkhla Support Center Emergency Procedures Manual

This is the manual with procedures and guidance for the personnel of Songkhla and the Functional Positions that will handle the operations of the Songkhla Support Center routinely and during an emergency.

### 3.0 TRAINING FOR EMERGENCIES

The essential elements of emergency preparedness are training and the assignment of personnel with specific duties and responsibilities, followed by continued drills or exercises such that necessary actions become "second nature" when a real emergency condition occurs.

Preparatory emergency training is mandatory and as appropriate includes the following:

- Key Individual Emergency Procedures Training.
- Pre-Emergency Planning Requirements.
- Emergency Evacuation Planning.
- Spill Prevention Control & Counter Measure Procedures Training\*.
- On-site MSDS's And Their Use.
- Hazmat Response Training.
- React/Back-up Team Leader Training.
- Personnel Accounting Procedures.
- Fire Response Training.
- Rescue Training (Man Overboard).
- Sea Survival Training.
- Search and Rescue Training.
- Accident/Incident Reporting Procedures.

Training and periodic drills will also identify and allow for the correction of deficiencies in the procedures and allow improvement of the Checklists and Procedures.



## 4.0 EMERGENCY PROCEDURE MANUALS

The Unocal Thailand Emergency Procedures Manuals (EPMs) are arranged in two parts. The sections of Part I provide specific details on the responsibilities of the key individuals and provides resource guidance which may be helpful during an incident, e.g., telephone directory references, details or forms with guidance on required notifications and reporting, and the Unocal Thailand Emergency Organization provided in a condensed format. The sections of the EPMs are divided with tabs for easy reference.

The Checklists of Part I of the Manuals are the heart of the procedure as they provide a systematic approach to the actions necessary during an emergency or spill. The basic premise is that, if each key person follows their Checklist, most necessary activities will be considered and performed without a duplication of effort. There are, however, items within the Checklists to confirm important actions or to "coach" another key individual. This is to ensure no actions are overlooked and they are designed to be a double check, not a duplication of effort.

Each numbered line of the Checklist is a brief action statement designed to refresh the person's memory about a particular action each statement should be considered for its applicability then either performed if the action is relevant to the present emergency or skipped and the action on next line then carried out.

The remainder of Part 1 contains resource guidance which may be helpful during an emergency, i.e. telephone directory reference, and details or forms for notifying third parties.

Part 2 contains the training materials of the manual, these sections provide more specific details on the responsibilities of the key individuals and present background information on the Unocal Thailand emergency procedures and the duties of both the Offshore, Onshore and Emergency Control Center staff during an emergency.

Emergency Drill Report Forms are located in the Training Exercises Section of the Emergency Procedures Manuals. These are designed to aid in planning training exercises and drills. The forms are completed and distributed after each training drill or exercise to benefit from the lessons learned.