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Doctors For You

A REPORT ON HEALTH IMPACT ASSESSMENT STUDY DUE TO SPILLAGE FROM ABANDONED OIL WELLS

CHANGPANG II - WOKHA DISTRICT, NAGALAND



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DOCTORS FOR YOU (DFY) is a humanitarian organization based in India, formed by doctors, medical students and like minded people. The thrust of DFY's work is to provide medical relief, sustainable healthcare services, capacity building and risk reduction activities during crisis and non crisis situations. The organization has vast experience of working in disasters which include Mumbai floods 2005, Bihar floods 2008, Andhra Pradesh-Karnataka floods 2009, Orissa floods 2011, Assam ethnic violence 2012 and Uttarakhand Floods 2013. It has achieved considerable recognition for its work nationally and internationally as well. Its latest awards include the British Medical Journal Group Award for the "Best Medical Team in a Crisis Zone" as well as the SAARC Award for "Outstanding contribution to humanitarian works in the aftermath of disasters."

For more details on DFY please do visit www.doctorsforyou.org

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BACKGROUND

In regions around the world, oil is commonly categorized as one of the highest valued resources an organization can extract from the ground. Nagaland is sitting on top of black gold in the form of crude oil, whose reserves is estimated at 600 million tonnes, located at various oil basins, with the Changpang oil basin believed to be holding the biggest and best reserve. Changpang situated in the Lower Lotha Range in the Bhandari Sub-Division is 120 Kms away from the Wokha District Headquarter. It has been reported that there is sufficient Hydro Carbon (Crude Oil) deposits all along the Nagaland Foothill adjoining Assam. This belt is geographically known as "SCHUPPEN BELT". ONGC¹ started working in Changpang as early as 1963 and discovered oil in the Changpang area. The trial production started in March, 1981. This area of the SCHUPPEN BELT was found to be highly oil prospective and the exploration continued until 2nd May 1994 when on matters of Government policy the Nagaland State Government stopped all ONGC activities.² Since then, for the last 20 years, there has been no activity and the oil field is under abandoned state. However, some of the abandoned oil wells are spilling crude oil over the last few years which have led to extensive damage of farmlands, water sources, flora and fauna besides creating serious health hazards to the local population. With these features, the hope of achieving a sustainable living standard continued to diminish. The contributions of oil sector to the standard of living have rather been significantly negative, both in terms of environmental damages done and the lack of impact of huge oil revenues on people's welfare.

INTRODUCTION

Oil and Natural gases are excellent sources of energy. A country or state with natural reserves of crude oil and gas if possess the skill and technology of properly exploring and extracting the reserves judiciously can shoot up its income and place itself among the top economies of the world. But on the other hand, unwholesome and environmentally unacceptable pollution effects of the waste from these industries are cause for worry. The uncontrolled disposal of waste into water renders water unsafe for economic use, recreational use and poses a threat to human life and it is also against the principle of sustainable development. Oil extraction is a complicated process that has the potential for unfortunate consequences. Oil spills have extensively contaminated the landscape, damaging both the environment and the health of the people living in the area. Oil contamination has adversely affected the lives of many people living in areas near oil exploration sites. With crude oil and production chemicals polluting water supplies, air, and surrounding plant and animal life, human health has suffered. Because a high percentage of those affected by oil contamination live off the land, local economies have also been impacted by the destruction of the surrounding environment. In addition to physical effects, economic stress affects the psychological health of the individuals living in polluted areas.

Our study focuses on health issues affecting people living in areas contaminated by oil spill in Changpang II village of Nagaland. Changpang I, another village located on top of a hill was also studied in terms of health status of the people residing there. Traditionally people from both the villages belong to Lotha Tribe and they share the same culture and way of living. The only difference is the spill in Changpang II because of oil exploration. Because of absence of health center in Changpang II people have to move to another town bordering Assam for health

¹ Oil and Natural Gas Corporation Limited

² <http://kvkwokha.nic.in/DistrictProfile.htm>

checkups. Therefore there are no existing health records of the local population in the village. During our visit free health camps were conducted to assess the health needs of the population.

OBJECTIVE OF THE STUDY

To assess the health impact on the population of Changpang II over the last 15 years due to spillage from abandoned oil rigs.

DATA COLLECTED

- GPS location of oil rigs, schools, church and health centre from Changpang I and Changpang II.
- 15 years record of health data from sub-centre of Changpang I.
- Group discussion with women and adolescent girls from Changpang I.
- Data of households from Changpang II.
- Health camp data records from Changpang II.

DATE OF STUDY

29th March to 5th April 2014

CHANGPANG I

Location - Latitude - 26°23.797' (N), Longitude - 094°12.161', Elevation - 1875 feet

Record of Health Data

Sl no.	Disease Profile	Age Groups of Patients(years)										% (in terms of total patients)	
		0-5		5-15		15-50		Above50 years		Total			
		M	F	M	F	M	F	M	F	M	F	M	F
1	Gastritis	Nil	Nil	Nil	3	57	46	46	25	103	74	12.1	8.0
2	Headache	Nil	Nil	1	3	29	28	24	32	54	63	6.4	6.9
3	Weakness	3	2	2	5	81	231	142	158	228	396	26.9	43.2
4	Abdominal Pain	4	4	5	3	10	26	11	7	30	40	3.5	4.4
5	Loose Motion	22	2	6	6	40	34	44	51	112	93	13.2	10.1
6	Diarrhea	Nil	Nil	1	1	1	2	2	3	4	6	0.5	0.7
7	Hypertension	Nil	Nil	Nil	Nil	20	19	23	26	43	45	5.1	5.0
8	Abortion	Nil	Nil	Nil	Nil	Nil	2	Nil	Nil	Nil	2	Nil	0.2
9	Malaria	2	2	11	5	50	39	16	7	79	53	9.3	5.8
10	Boil	1	2	2	2	10	9	1	1	14	14	1.7	1.5
11	Chest Pain	1	1	Nil	Nil	13	6	5	11	19	18	2.2	2.0
12	Asthma	Nil	1	Nil	Nil	Nil	Nil	Nil	Nil	1	Nil	0.1	Nil
13	Cataract	Nil	Nil	1	Nil	4	4	7	20	12	24	1.4	2.6
14	Pneumonia	3	2	Nil	Nil	6	13	3	9	12	24	1.4	2.6
15	Skin rashes	8	12	4	4	17	25	6	7	35	48	4.1	5.2
16	RTI*	18	8	3	Nil	1	8	1	Nil	23	16	2.7	1.7

* Respiratory Tract Infection

The above table represents the overall patient record data of major disease conditions from Changpang I over the past 15 years that was reported. The data was collected from Village Sub-Health Centre. **Weakness** seems to be the major reason of illness, 26.9% males and 43.2% females suffered from it, which might be attributed to hilly terrain where the people reside. **Loose motion** takes the 2nd place in the disease history with 12.5% males and 8.0 % females suffering from it. **Gastritis** is in the 3rd place with 12.1% males and 8.0% females. There seems to be an overall rise in the number of hypertensive patients over the years. Besides this there have been cases of cataract among the elderly, skin rashes in all age groups, abdominal pain, RTI, chest pain etc.

Talking about the overall reproductive health of the village over the past 15 years, there are total 124 cases of pregnancy reported and 100 cases of safe delivery. Over the years there are 2 cases of abortion reported although in reality there might be more unreported cases. Women suffer more from lower abdominal pain (4.4%) between the age group of 15-50 years which might be attributed to dysmenorrhea.

Women's Group Discussion

A one hour women's meet was conducted in the local sub-health centre in order to discuss health related issues of the women in the area over the last 25-30 years. A total of 22 women and adolescent girls attended the discussion. Most of the women above the age of 50 complained of joint pain and lower back pain. This can be attributed to the heavy physical workload and lifestyle of people living in the area and their means of livelihood which makes them work for long hours in the agricultural fields situated in the hills. Moreover they have to climb up and down the hills several times a day for other activities. A majority of elderly women complained of dizziness, weakness and loss of appetite. Six women of ages between 25-44 years complained of leucorrhoea. No incidence of cancer or congenital deformities at birth in the village was revealed during the discussion.



Group discussion between women groups in Changpang I

CHANGPANG II

Location - Latitude - 26°26.713' (N), Longitude - 094°10.733', Elevation – 402.9 feet

Background of study area

The village of Changpang II with its calm and serene environment is located amidst hillocks and plains just in the border of Assam and Nagaland. According to 2010 census report a total of 73 households consisting of 453 members reside in the village. The villagers belong to Lotha community who were actually inhabitants from Changpang I. Changpang II was originally a community owned land but during 1970's when ONGC started exploring the village for oil, people from Changpang I started moving downhill i.e. Changpang II and settled there with hopes and aspirations for new jobs in ONGC, better education and a dreams of improved economy and livelihood. But unfortunately there dreams were totally shattered, when ONGC had to shut down their unit due to unresolved government policy. Now the villagers were totally dependent upon agriculture, poultry, piggery and other local sources of income. Villagers cultivate paddy, maize, chilly, brinjal, pea, lemon, potato, wheat and others. A few of them also cultivate tea and rubber plants. Calm, hardworking and hospitable by nature the villagers still have hopes that ONGC will restart their unit in the area in near future.



A view of Changpang II village

Although the people are aware of oil spill in the area due to leakage in the rigs, they are not completely acquainted with the hazardous effects of the spill upon their health. In spite of the ONGC functioning in the area for almost two decades, the village still has no proper water supply and electricity. The people depend upon the few natural water sources in and around the area like springs and ponds which gradually dry up during the winters and are most likely contaminated by oil. Few households also have wells. The traditional water harvesting method has been stopped in the village since oil spillage. Some villagers also have to fetch water from a distance of more than one kilometre from their homes. For drinking purpose the households use boiled and filtered water but for any other purpose, the water remains untreated. There are no

health centers and proper road connectivity in the area. For children's education there are two primary schools.

Present condition of the oil rigs

There are mixed feeling regarding the exact period of oil spillage from the local people but some reported that oil spill has been occurring in Changpang II since ONGC left i.e. after 1994. There are a total of 28 rigs in the area of which only 16 were accessible for us. Government of Nagaland has constructed cement walls around the rigs but most of the rigs still spill oil and some of the rigs are submerged in oil. Even with the wall, leakage of oil to the nearby areas including agricultural fields is continuing and the situation is compounded especially during rainy season. During rainy season, rain water get mixed with the oil and move downhill contaminating the water sources and agricultural fields.



Rigs spilling oil

Health Camp

A three day health camp was conducted in the community hall of the village. A total of 96 patients were examined and drugs were dispensed by two doctors and a pharmacist. The following is list of major diseases with total number of cases and age groups.

Sl. no.	DISEASE	NO. OF CASES	AGE GROUPS(YEARS)
1	Skin Rashes/Infection	19	3-70
2	Cataract	10	15-88
3	Backache/Joint Pain	25	30-88
4	Dysmenorrhoea	3	20-36
5	Sinusitis	3	30-50
6	Bleeding PR	1	40
7	Infertility	1	22

The health camp helped to get acquainted with the villagers and get a clearer and better picture of the current health scenario and prevailing illnesses and diseases in the village. The health camp was organized keeping in mind the limitations of our services and the number of drugs available for distribution. More serious cases which cannot be fully diagnosed or treated by our doctors were referred to higher centers. The most important finding of the assessment was the prevalence of recurrent skin rashes which does not respond to treatment in a population whose main livelihood is agriculture. Almost all persons interviewed and examined for skin rashes in the health camp that was organised, work in paddy fields that are directly below 3 rigs which are still spilling oil. Skin conditions like Eczema, Ichthyosis, Tinea and other non specific allergic conditions are very common among villagers of almost all age groups (3-70years).



Doctors examining patients during the health camp



Skin diseases found during health camp



Patient with dental enamel loss

Household Visits

DFY team visited a total of 12 households for 3 days in order to get a deeper insight into the health related issues of the community. Different parts of the village were covered within the 3 days. Besides high incidence of skin allergies and infections, the population also has a high prevalence of cataracts irrespective of age group. **Cataract** is a clouding of the lens inside the eye which leads to a decrease in vision. It is the most common cause of blindness. It is most commonly due to biological aging, but there are a wide variety of other causes like trauma, genetics, radiation, drug use and skin diseases. Some study also shows that prolonged exposure to benzene and polycyclic aromatic hydrocarbons (PAHs) found in crude oil found can cause cataracts.³ Strikingly only people who have resided in the village for more than 5 years were found to have cataracts. There are several cases of **inability to conceive, miscarriages and spontaneous** abortions reported by the ASHA worker but the community were not very forthcoming about it due to cultural barriers. Despite the high fertility and fecundity of the tribal population in north eastern India, one **infertile** couple was detected. A few chronic sinusitis cases were also identified. There were two cases of **Cancer** detected -- one case of breast cancer which was treated by B/L mastectomy and chemotherapy and another case of rectal carcinoma which went untreated and the patient expired. More cases might be reported when the birth and death register office is approached. We also found two cases of **dental enamel loss** in the same family -- one 3 year old child and his mother. Most of the population suffer from **chronic gastritis**, though traditionally they eat mostly boiled food, herbs and use spices and oils sparingly.

Only those subjects were chosen for case study that were diagnosed with diseases like skin rashes, cataract etc. because of time limitation during the study. Case studies of the 12 households are discussed below.

Case Study 1

Woyami Odyyua is a 73 year old woman residing in Changpang II since the last 11 years. Her house is below the Special Intelligence Branch (SIB) office. She has three sons. One of them stays separately in the village and the other two stays in another town. She is a very hardworking lady busy working in her garden and poultry all day despite her old age. She has been suffering from cataract since the last five years and suffers from poor visibility. She has difficulty in breathing and complains of chronic gastritis and loss of appetite. She also has a record of hypertension in her family. Her husband died of brain tumor 40 years back for which he received treatment in Guwahati but finally succumbed due to haemorrhage.

Case Study 2

Mhathung Kithan is a 55 year old man residing in the village since 1993 with his wife and children. He is a farmer and a father of four children, 3 girls of age 18, 17 and 11 years respectively and a boy, 16 years old. His farmland is situated 3-4 km away from the place of oil spill. Mhathung and his children suffer from skin problems including skin rashes, itchy skin and

³ <http://www.bpoilfundclaim.com/exposure-to-oil.html>

allergic infestation since the last 2 years. He also complained of gastritis. His father suffered from asthma right from the time he came to Chanpang II village. His wife Mhalo Kithan, aged 40 years has been suffering from cataract since the past 3 years. She has had 2 abortions from the time of her marriage (21 years back) and complains of weakness and loss of appetite. Her mother also has a history of cancer.

Case Study 3

Achimi Theongli, aged 45 years lives near Extra Assistant Commissioner (EAC) office of the village with her husband and a male child (13 years) since 2005. They earn their livelihood by farming and have been married for 25 years. She was unable to conceive after the first child which also took a long time to happen. Since the time she has been residing in Changpang II, she is suffering from cataract and has very poor visibility, which is rare even at her age. Skin irritation, rashes and itching seems to be occurring from time to time since the last 2 years. She also complains of hypertension and gastritis. Her husband Mhonthung stays in Kohima. Although he does not suffer from skin conditions but he has pulmonary problems which increases when he comes to the village.

Case study 4

Thungchamo Kithan along with his wife and two children (boys) Morbeno, 10 years old and Yanabemo, 13 years old stays in the village since the last 12 years. He is a farmer and works in his fields about 2-3 kms away from oil spill area. Four years back he shifted to another locality in the village and since then, they are having a number of health issues in the family. Apart from the occasional gastritis problem, all the family members suffer from poor visibility and haziness in vision, even the kids. They complained of poor vaccination coverage in the village. Both the kids suffer from severe skin conditions that need immediate medical treatment.

Case study 5

Yampeni Kithan, 37 years old and a house wife, lives with her husband James Kithan in the village since the last 25 years with 6 children, 3 sons and 3 daughters. Her family members are engaged in both government services and farming. Their agricultural field is situated 3-4 kms away from oil spill area. James is a chain smoker and suffers from hypertension. All family members suffer from gastritis. Yampeni has a history of breast cancer and underwent left mastectomy in the year 2002 for which she did not receive radiotherapy. She takes betel nut, *zarda*(tobacco) and is exposed to passive smoking as well. After the surgery she complains of loss of appetite. Although Yampeni reports no abortion but there was a documented report of abortion in 2001. Son, Jonsuamo, 10 years old, has a congenital fistula over upper part of left side bridge of nose. He also suffers from skin rashes and ulcers. Zorenthung, 15 years old has been suffering from itchy skin since the past one year.

Case study 6

Opvuo Odyuo, 72 years of age lives with his wife E. Lotha and a son (Aron). Their family has been residing in the village since the last 20 years. Just like the other inhabitants of Changpang, he is also a farmer. His house is located just 400m away from the area of oil spill. He has been suffering from gastritis for over a decade now and hypertension as well as cataract since the last 3 years. He also reported of suffering from kidney stones since the past 7 years. E. Lotha is

Opvuo's 2nd wife. His first wife died of stomach/rectal cancer in the year 2009. He said that his 1st wife's father also died of stomach cancer. Besides this, they complained of occasional skin problems.

Case study 7

Anyimro Kithan, 30 years old and Lithungo Kithan, 35 years old, are a couple residing in the village since the last 3 years, earning their livelihood by farming. They have two sons and a daughter. Their agricultural field is located just 500 m away from CN 21. They have another farmland close to the leaking oil rig CN 7, 6 and 4. Before coming to Changpang II, they were residents of Changpang I. During that time, they had a child who died after one month of delivery, the reason of death, hesitant to answer. Apart from gastritis, husband and wife as well as their 10 year old son, Enithung complained of occasional skin infections which only get momentary relief when treated with medicines.

Case study 8

Lizamo Kikon and Nribeni Kikon, 50 and 40 years old respectively are a couple, earning their livelihood by farming. They came to Changpang II more than 15 years ago. They have two kids, one boy and a girl. Their field is 3-4 kms away from the oil spill area. Lizamo has cataract in both the eyes and he is suffering from poor vision since the last 5 years. He also has sinusitis problem and was operated for the same but still complains of it. He said that leaking from ONGC oil rigs in the area started occurring just one year after they stopped oil extraction in 1994 and since then the oil mixes with rain water or river water and drains down to their agricultural fields. Their overall yield from farming has hence decreased to almost half. Both Lizamo and Nribeni suffer from skin problems like rashes and itchy dry skin. Nribeni also complains of backache.

Case study 9

Alon Kuki is a 38 year old police man living in Chandpang II from 2004 with his wife and 5 children, 3 sons and 2 daughters. Their family suffers from severe skin problems. The skin rashes started with Alon and then afflicted his wife which subsequently affected their 2 elder sons. Interestingly, his daughters do not have any complaint of skin rashes. All the family members who work in the agricultural fields have skin rashes excepting their youngest son and their daughters who are not involved in agricultural work. Both husband and wife also have complaint of blurring of vision along with their eldest so since last 5 years.

Case study 10

Hajiv Shitio, 48 years, lives with her husband Sulumo Shitio, 58 years in Changpang II since last 24 years. They have three sons and one daughter. Her husband work in the field located 1 km away from the oil spilling rigs (CN 4, CN 6, CN 7). Hajiv suffers from hypertension and has skin problems like rashes and ulcers on her elbows since one year for which she was prescribed fluconazole. Her husband Sulumo also complains of skin problem. He has been suffering from recurrent skin rashes since the last 3 years on his right forearm, face, scalp, ears etc. Both husband and wife have cataract from 1 year.

Case study 11

Rang Bahadur Chetri is a farmer who stay in the village with his family. He has 4 children, 2 sons and 2 daughters. They have been residing in the village for the past 30 years. His agricultural field is 5-6 kms away from oil spill area. He has cataract since the past 10 years and his wife also suffers from cataract. They complained of skin problems in the family. His daughter Sibanki, 13 years old recently developed skin conditions like rashes and ulcers for which she has not consulted any physician.

Case study 12

Nymo Kithan, 82 years of age, has been residing in the village for more than 15 years and suffers from cataract in both the eyes since the past 2 years. He also complains of back pain and arthritis since the past 7 years. He also has gastritis and is losing his appetite. He had 10 children of which one died due to unexplained reasons.

KEY FINDINGS:

1. The oil spill has occurred in Changpang II village of Wokha district since the last 18 years. There are a total of 28 rigs in the area of which only 16 were accessible for us.
2. The most important finding of the assessment was the prevalence of recurrent skin rashes and skin related diseases which do not respond to treatment in a population whose main livelihood is agriculture. Almost all persons interviewed and examined for skin rashes in the health camp that was organised, work in paddy fields that are directly below 3 rigs which are still spilling oil. Skin conditions like Eczema, Ichthyosis, Tinea and other non specific allergic conditions are very common.
3. The population also has a high prevalence of cataracts irrespective of age group. Strikingly only people who have resided in the village for more than 5 years were found to have cataracts. Even young boys and girls reported of poor vision and irritability in the eye.
4. There are several cases of inability to conceive, miscarriages and spontaneous abortions reported by the ASHA worker but the community were not very forthcoming about it due to cultural barriers.
5. Menstrual problems like dysmenorrhea are very common among the ladies population of the village. Heavy menstrual bleeding, excessive lower abdominal and back pain during menstruation as well as leucorrhoea was reported by many women during the health camp.
6. There were two cases of cancer detected -- 1 case of breast cancer which was treated by B/L mastectomy and chemotherapy and 1 case of rectal carcinoma which went untreated and the patient expired. More cases might be reported when the birth and death register office is approached.
7. We also found two cases of dental enamel loss in the same family -- one 3 year old child and his mother.

8. Most of the population suffer from chronic gastritis, though traditionally they eat mostly boiled food, herbs and use spices and oils sparingly
9. Despite the high fertility and fecundity of the tribal population in north eastern India, one infertile couple was detected.
10. A few chronic sinusitis cases were also identified.
11. Growing trend of hypertension was noticed among the villagers in the past few years. From the 12 household visits, 50% of them have a history of hypertension in the family.
12. The community is dependent on mountain streams for water and people have complained that the water used to smell of oil but they have adapted themselves over the years.
13. Personal experience of DFY team and accompanying doctor is skin irritation after bathing or washing face.
14. The oil rigs continue to spill oil which is spread in the community and the agricultural fields during the rainy season.

Limitation of the study

- Household data collection was collected only during evening hours since majority of the households were busy in their agricultural fields during daytime.

Recommendation for further intervention

- Health camps especially for eye and skin related problems should be organized in the study area. It will further help for an in-depth analysis of health impact because of oil spillage.
- Further testing of water samples from household storage and collection points should be done and analysed.
- Conducting detailed door to door health survey with the help of ASHA worker on a half-yearly basis. This will help in tracing the health impact of the population over a period of time in the study area.
- Due to the rising skin diseases and the need for its immediate treatment along with other diseases it very important to set up a health centre or hospital in the village as there are none and people have to go miles away from their homes in case of medical emergency.
- As reported by the villagers and also by the personal experience of DFY team, the water used for bathing, washing and drinking purpose, smell of oil and cause visible skin issues. Keeping that in mind we recommend setting up of a better hygienic water source for the villagers of Changpang II as they still rely on natural water sources like rain water collection and drawing from river and often face water scarcity during the dry seasons. There is no underground water extraction motor pump or tubewell in the village.
- Conducting a case control study by comparing the health profile of Changpang II and a village that is not affected by the oil spill in any way whatsoever. This is will help establish the relation between the oil spill and the health profile of the population.






Annexure I

GPS details of key locations (Changpang I and Changpang II)

Sl. No.	Component	Latitude (N)	Longitude (E)	Elevation(in ft)
Changpang 1				
1.	Church Office (C1)	26°33.797'	094°12.161'	1875
2.	Church I (C1)	26°23.806'	094°12.167'	1876
3.	Church II (C1)	26°23.924'	094°12.147'	1872
4.	Health Centre (C1)	26°23.880'	094°11.836'	1852
5.	School (C1)	26°23.802'	094°11.856'	1860
Changpang 2				
6.	CN-6	26°26.237'	094°10.816'	617
7.	CN-7	26°26.233'	094°10.817'	617
8.	CN-4	26°26.243'	094°10.822'	617
9.	Waste Pit	26°26.912'	094°10.841'	349.7
10.	House No. 79	26°26.734'	094°10.900'	409.5
11.	House No. 77	26°26.738'	094°10.878'	353
12.	Church (C2)	26°26.713'	094°10.733'	402.9
13.	House No. 31	26°26.689'	094°10.700'	366.6
14.	House No. 85	26°26.648'	094°10.791'	359.2
15.	House No. 06	26°26.945'	094°10.799'	354
16.	CN-20	26°26.806'	094°10.827'	342
17.	CN-27	26°26.809'	094°10.832'	342
18.	CN-05	26°26.806'	094°10.857'	342
19.	CN-21	26°26.803'	094°10.826'	342
20.	House No. 79	26°26.726'	094°10.877'	409.5
21.	House No. 50	26°26.747'	094°10.886'	376
22.	House No. 49	26°26.525'	094°10.704'	347.8
23.	House No. 56	26°26.465'	094°10.685'	405
24.	CN-11	26°26.596'	094°10.741'	344
25.	CN-15	26°26.604'	094°10.750'	328
26.	CN-12	26°26.610'	094°10.737'	328
27.	CN-29	26°26.618'	094°10.734'	328
28.	Water Source School Campus	26°26.875'	094°11.190'	437
29.	RIG CN-1	26°26.979'	094°10.941'	340
30.	Waste pit cum pond	26°27.005'	094°10.858'	353
31.	Waste pit school campus	26°26.992'	094°10.781'	307
32.	Chanpang II School	26°26.944'	094°10.730'	320
33.	Assam side Rig	26°27.156'	094°10.726'	327
34.	CN-14	26°26.955'	094°10.836'	360
35.	CN-10	26°26.952'	094°10.843'	360
36.	CN-13	26°26.949'	094°10.849'	360
37.	House No. 18	26°26.857'	094°10.759'	358
38.	House No. 75 (A)	26°26.773'	094°10.861'	376
39.	CN-8	26°26.396'	094°10.603'	382
40.	Coal mine	26°26.446'	094°10.675'	385
41.	Pond (water source)	26°26.507'	094°10.637'	365
42.	ONGC school	26°26.537'	094°10.670'	353
43.	Below SIB office	26°26.534'	094°10.728'	342

Annexure II

Photo Dossier- (A) Oil Rigs

	
<p>CN 1</p>	<p>CN 2</p>
	
<p>CN 4</p>	<p>CN 5</p>
	
<p>CN 6</p>	<p>CN 8</p>



CN 10



CN 11



CN 13



CN 14



CN 15



CN 20



CN 21



CN 27



CN 29



CN 7

(B) A glimpse of Changpang I and Changpang II

Changpang I



Health Sub-Centre



Rainwater Harvesting



Primary School



Village church and office

Changpang II



Village Church



Primary School



Primary School



Waste Pit



Women collecting water from a pond for household purpose



Artificial pond constructed by ONGC



Vegetation near oil spillage area



Coal excavation site