

**POSTER NO. 36**  
**THE INFLUENCE OF OIL SPILL BY**  
**TASMAN SPIRIT ON THE**  
**CHEMICAL COMPOSITION OF**  
**SEAWEEEDS AROUND THE COAST**  
**OF KARACHI**

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# ABSTRACT

- The Karachi coastline, which is more than 100 KM long is already facing severe pollution due to combination of different factors, a new problem of oil spill pollution on Clifton beach has come when an old Greek oil tanker "Tasman spirit" with more than 67,532 tones of crude oil hit the Karachi coast.
- The present study is based on pre and post Tasman spirit oil spill incidence.
- The present results for major and minor elements were very high as compare to pre Tasman spirit studies.

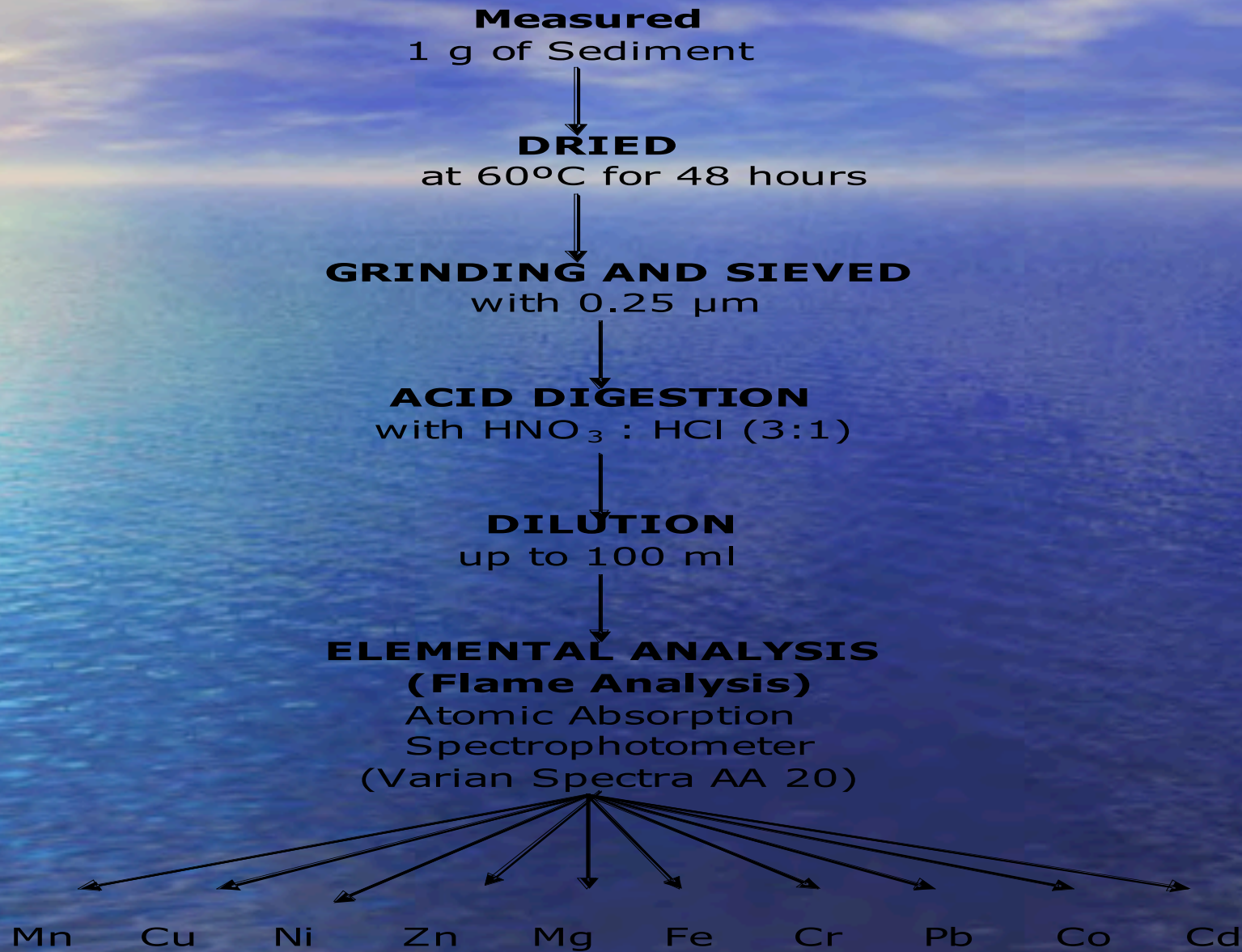
# OBJECTIVE, PURPOSE AND BACKGROUND

- In Pakistan few workers also carried out research on chemical constituents of seaweeds, but all the previous studies are pre Tasman spirit oil spill.
- There is no information related to chemical composition of seaweeds along the Karachi coast after Tasman spirit.
- The present study was undertaken to determine and compare the influence of oil spill by Tasman spirit on the chemical composition of seaweeds.
- Chemical composition of seaweed is related to their concentration in water and the use of seaweeds as an indicators gives at least a qualitative picture of heavy metals contamination in the area of study.

## METHODOLOGY, DATA COLLECTION AND ANALYSIS

- Both the attached and drifted seaweeds were sampled from at five different affected sites (Clifton, Korangi Creek, Sandspit, Buleji and Manora).
- Digestion of samples was carried out as described by Denton and Burdon Jones (1986).
- After digestion the concentrations of Cr, Mn, Fe, Co, Ni, Cu, Zn, Cd, Hg, Pb and Mg were measured by Atomic Absorption Spectrophotometer.

# STUDY SETTING AND DESIGN



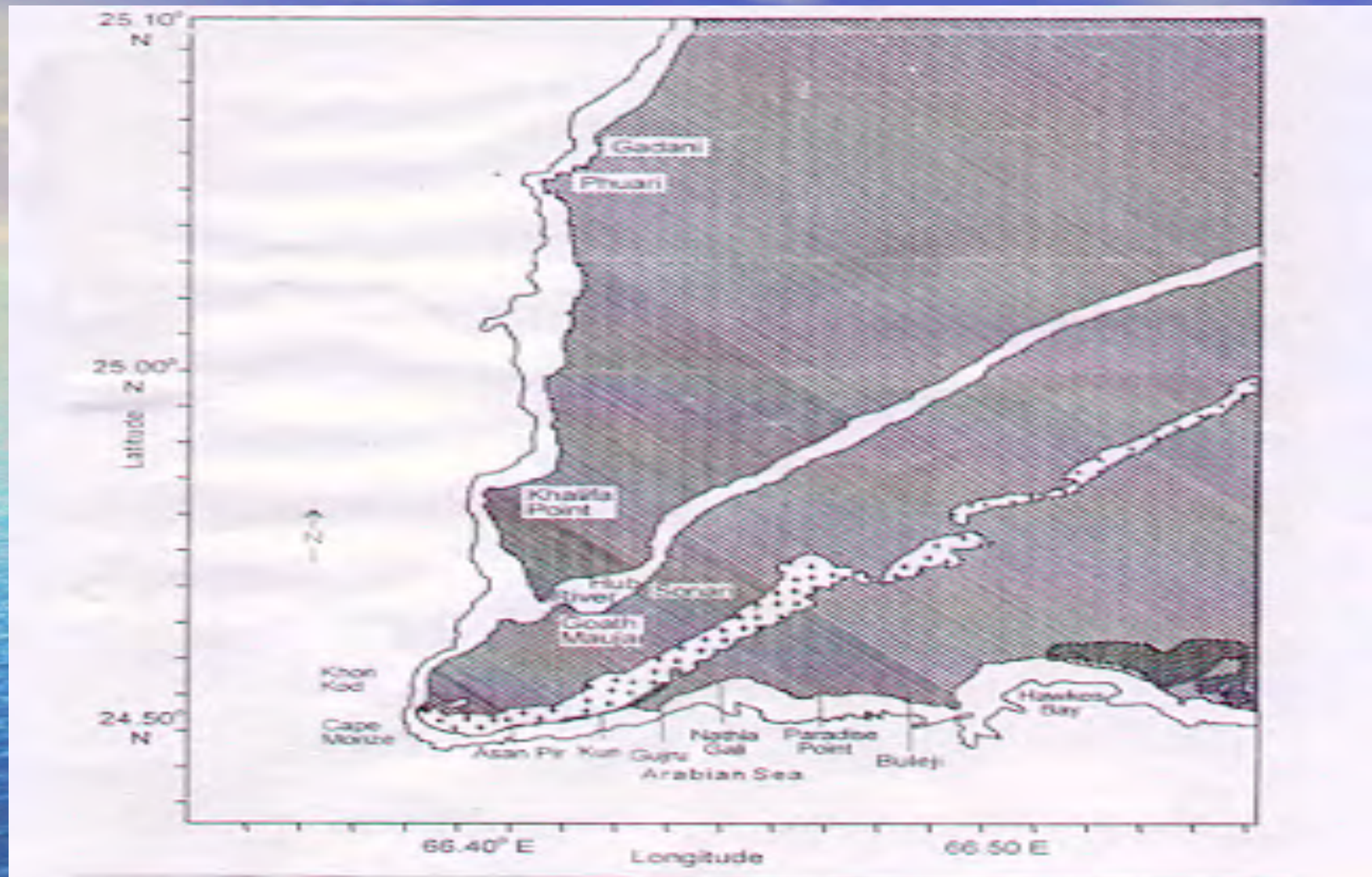


Figure 1.1 Map showing sampling site ① Buleji ② Paradise Point ③ Nathia Gal

# Greek Oil tanker Tasman Spirit



**The Clifton beach, a popular gathering point.**



# Tasman Spirit after broken in to two parts



# RESULTS AND FINDING

Major elements concentration in seaweed from the Karachi coast.

## Before Tasman Spirit Oil Spill

S.No	Group of seaweeds	Na	K	Ca	Mg
1	Green Seaweeds	4.0-6.83	5.8-7.0	2.43-3.0	7.43-9.83
2	Brown Seaweeds	8.0-8.5	3.66-4.0	4.04-3.66	0.5-7.24
3	Red Seaweeds	7.35-8.0	7.0-7.58	6.65--7.11	2.2-7.8

## After Tasman Spirit Oil Spill

S.No	Group of seaweeds	Na	K	Ca	Mg
1	Green Seaweeds	6.6-8.5	6.9-7.66	7.5-14.3	7.5-10.3
2	Brown Seaweeds	7.5-7.56	6.11-7.43	4.42-6	6.82-7.8
3	Red Seaweeds	7.5-8.5	7.86-9.11	7.81-8.11	10.49-11.3

# Minor elements concentration in red seaweed species from the Karachi coast.

## Before Tasman Spirit Oil Spill

S.No	Group Of Seaweeds	Cr	Mn	Fe	Zn	Ni
1	Green Seaweeds	0.027-0.32	0.4-0.45	2.1-8.65	0.014-0.056	0.02-0.021
2	Brown Seaweeds	0.021-0.061	0.11-0.6	1.05-7.9	0.02-0.134	0.011-0.073
3	Red Seaweeds	0.011-0.073	0.08-0.53	0.75-4.5	0.015-0.125	0.009-0.077

## After Tasman Spirit Oil Spill

S.No	Group Of Seaweeds	Cr	Mn	Fe	Zn	Ni
1	Green Seaweeds	80.6-81.5	190.6-223.5	191.67-211.5	112.6-120.3	23.8-31.6
2	Brown Seaweeds	47.5-55.3	112-122	453-540.67	115.6-121.5	5.82-7.87
3	Red Seaweeds	41.5-54.3	136.8-122.5	111.5-130.3	59.5-77.8	3.6-4.6

# Minor elements concentration in red seaweed species from the Karachi coast.

## Before Tasman Spirit Oil Spill

S.No	Group Of Seaweeds	Cu	Pb	Co	Cd	Hg*
1	Green Seaweeds	0.031-0.04	0.062-0.173	0.04-0.042	0.007-0.013	—
2	Brown Seaweeds	0.005-0.254	0.02-0.11	0.01-0.066	0.004-0.052	—
3	Red Seaweeds	0.005-0.08	0.011-0.131	0.004-0.04	0.002-0.05	—

## After Tasman Spirit Oil Spill

S.No	Group Of Seaweeds	Cu	Pb	Co	Cd	Hg
1	Green Seaweeds	0.15-0.2	1.03-1.65	1.45-1.6	0-0.02	0.0015-0.002
2	Brown Seaweeds	1.6-2	2-2.34	0.4-0.56	0.003-0.01	0.001-0.002
3	Red Seaweeds	0.21-0.26	0.86-1.54	0.38-0.5	0.001-0.03	0.001-0.004

**\*Data not Available**

# DISCUSSION AND CONCLUSIONS

- The present results reveal that accumulation of elements in seaweeds were different at different beaches that could be related to extent of pollution at that particular beaches or preferential accumulation by seaweeds.
- The present results show accumulations of elements were high in green and brown seaweeds as compared to red seaweed.
- Fe, Pb and Co were present n high concentration at Clifton, Korangi Creek, and Sandspit beach as compare to other beaches. It is probably due to recent oil spill by Tasman spirit.
- It is also concluded that the oil Spill have big effect on the biomass and distribution of seaweeds.
- It is suggested that immediate measures to control the indiscriminate discharge of effluent and domestic sewage in to the sea and special attention and regular monitoring programs of coastal areas are essentially required.