

Marine Fisheries

metadata, citation and similar papers at core.ac.uk

brought to you by

provided by CMFRI Digital R

Information Service

**Technical and
Extension Series**



Central Marine Fisheries Research Institute

(Indian Council of Agricultural Research)

Post Box No. 1603, Cochin - 682 018, India



Pollution from fishmeal plant discharge at Mukka beach, north of Mangalore

Effluents from various industries are major source of pollutants in the coastal areas. The type and magnitude of pollution and the impact on coastal environment depends on the physical and chemical characteristics of the effluent, the mode of discharge and the hydrodynamics of the receiving body. While several chemical manufacturing industries produce toxic effluents which need special treatment and disposal, the process wastewater from fish/food processing units have high organic content which can be

removed by simple methods. The effluents from seafood processing (such as shrimp processing) units in most of the places are of limited quantity and directly discharged into the neighbouring water bodies. Apart from raising the BOD in the immediate vicinity, these limited effluents generally do not cause any severe damage to the system. However, the waste from fishmeal plants which contain the body fluids of fish, often cause severe pollution which may even lead to deterioration of coastal beaches.

An incidence of pollution from fish meal plants had occurred at Mukka beach, north of Mangalore recently. On learning that fish kill had been seen in the beach, the location was surveyed on 14th November 2006 and found that heavy organic load in the effluents of nearby fishmeal plants is severely affecting the locality. Three fishmeal producing units located adjacent to the beach are found to discharge their highly smelling effluents including blood and body fluids directly to the beach. The putrefying smell coming from the effluent creates a nauseating sensation for about a kilometer stretch of the beach. The water was found dull coloured, turbid and thick with the effluent for a width of about 500 m from the

coast, and extending northwards to more than 2 km, where the beach sand is also blackened. The fish kill probably was due to the depletion of oxygen in the nearshore waters caused by high organic load and biochemical oxygen demand (BOD).

In order to ascertain the extent of impact along the beach, a follow up survey was conducted on 07-12-2006 and water and sediment samples were taken for analysis from five stations covering near-field and far-field locations. The results of analysis are summarized in Table 1.

The prevailing coastal current during November-December is northerly. The gradient of pollutants and impact towards

Table 1. The hydrological parameters around the discharge point of effluent from fishmeal plant at Mukka beach, north of Mangalore

	#3 (1000m North)	#2 (500m North)	#1 (Discharge Point)	#4 (500m South)	#5 (1000m South)
Geographic Position	13°02'61N 74°46'92E	13°01'83N 74°47'09E	13°01'70N 74°47'11E	13°01'59N 74°47'11E	13°01'40N 74°47'11E
Seawater temperature (°C)	29.6	29.3	28.8	28.8	29.0
pH	7.12	6.90	6.90	7.90	7.98
Salinity (psu)	34.1	34.0	33.7	34.0	34.0
Dissolved oxygen (ml/l)	0.53	nd	3.19	3.81	4.50
5 Day BOD (ml/l)	95.75	92.25	112.0	2.43	2.23
Phosphate (µg-at/l)	21.60	19.85	33.6	1.30	1.15
Nitrate (µg-at/l)	0.67	0.51	1.62	1.23	1.07
Nitrite (µg-at/l)	0.165	0.227	0.289	1.18	0.99
Silicate (µg-at/l)	12.63	14.70	18.65	7.80	6.93
Oil and Grease (mg/l)	1.2	13.2	10.4	0.40	nd
Organic Carbon (%)*	0.137	0.067	0.113	0.084	nd

* in beach sediment, all other parameters in water, nd: Not detectable

north from the source and not towards south is therefore obvious. The BOD values are extremely high compared to the limit prescribed by the Central Pollution Control Board (3.0 mg/l -3 day BOD). The low levels of oxygen at most of the stations and depletion of oxygen at St # 2 are indicating the anaerobic process of decomposition in these waters, emitting putrefying smell in the neighbourhood. Oil and grease in water is also beyond the prescribed limit indicating the

potential to harm living organisms in these waters. Though high value of phosphate may cause some unusual blooming of plankton, the prevailing conditions, especially of low oxygen is not favourable for such events. Altogether the situation needs immediate attention. A delay in solving this issue may lead to irreparable damage to a stretch of coast line.

Prepared by : K. Vijayakumaran and G. Subramanya Bhat, RC of CMFRI, Mangalore