

Visit Report on Tar Ball appearance along the Coast of Gujarat – Visit to ONGC, Bombay High Plant on 08.07.2014

The Member Secretary, Gujarat Pollution Control Board communicated about the appearance of Tar ball all along the coast of Gujarat since last 4-5 years. He informed that GPCB has also investigated the matter of Tar Balls deposition within the State of Gujarat, however could not conclude the source for formation and appearance of tar ball. Accordingly Maharashtra Pollution Control Board was requested to look into the matter whether this tar ball formation phenomenon is from the Oil exploration and production areas located in the State of Maharashtra. Looking to the matter, the Member Secretary, MPCB has constituted a Committee for investigation comprising of the following Members:

- 1) Shri B.R. Naidu, Zonal Officer, CPCB, Vadodara,
- 2) Shri. P.K. Mirashe, Assistant Secretary (Technical), MPCB,
- 3) Mr. Yunus Tai, E.E., GPCB,
- 4) Dr. Anirudh Ram, Scientist, NIO, and
- 5) Commandant Anil Sharma, Coast Guard, Mumbai.

The Committee constituted by the MPCB visited O.N.G.C. platform at Bombay High to carry out aerial survey of the said area on 08.07.2014. The Committee's observations are as under:

- 1) The site in question is situated at offshore of Arabian Sea around 80-100 nautical miles. It comes in the territory of State of Maharashtra and under the surveillance of Coast Guard. Since, the site in question is beyond 5 kms/12 nautical miles, MPCB do not have any control over monitoring of the said area of exploration and processing facility. The Water (P &CP) Act, 1974 and Environment (Protection) Act, 1986 are not applicable to the activities being located beyond 5 kms/ 12 Nautical miles.
- 2) At Installation site, no oil was noticed floating on sea water near processing Platform.
- 3) At present the ONGC, Bombay High (E & P) is following guidelines as per Environment (Protection) Act, 1986, i.e 10 mg/l of O&G concentration as disposal standards for producer water.
- 4) The producer water after treatment i.e. oil & grease concentration less than 40 PPM discharged at the bottom of the sea (i.e. @ 40 mtrs. deep) for proper dilution/dispersion.
- 5) At BPB platform the crude is having H₂S concentration around 450 PPM. The PP has informed that the H₂S removable is not required at site as pipeline leading to Hajira and the facility at Hajira is designed for 1200 PPM of H₂S concentration; hence Sulphur recovery is made at their Hajira Plant.
- 6) Similarly, at B193 Platform, they are getting sour crude continuing H₂S concentration around 1900 PPM. The H₂S is scrubbed by using amine and the amine is regenerated by heating process. During regeneration, H₂S releases which is incinerated at @ 850°C. Resulting SO₂ emission is treated with caustic and sea water. Thus, there is formation of Sulphate during this process which is discharged into the sea where pH monitoring is being carried out. The continuous SO₂ monitoring provided was under maintenance.
- 7) They have provided technical flare system for the safety purpose. All the gases release during upset condition of the plant is diverted to the flare system for burning hydrocarbons.

After the visit the Committee had interaction with ONGC top Management. During meeting following discussion took place:

- 1) Dr. R.V. Marathe, ED and head of ONGC, Mumbai denied the source of tar ball formation from ONGC-Bombay High base. However, he has agreed to extend all possible cooperation for identification of sources. He also agreed to take up R&D activity in this regard. They have also informed that the oil exploration was going on since last half century and no such observations were noticed. They claimed that the crude quality is very good and is having more lighter fractions which evaporates (40% to 50%) before it reaches to the shore in case of any leakage/spill. As it is very difficult to identify the source which includes stationery sources such as E&P, moveable sources such as transiting ships.
- 2) The Committee has requested to provide crude and sediment sample from these 3 different locations for finger print analysis for which they have agreed.
- 3) It is proposed to collect crude and sediment samples from different sources and to generate data base with the help of NIO for Finger Print analysis for future use. However, the Committee Members felt that in view of above difficulties towards pointing out sources, for remedial measures all the probable stake holders may be held responsible.
- 4) It is also proposed to generate a Corpus Fund from all the stake holders under the leadership of ONGC being a major stake holder. The amount so collected should be spent to reimburse towards clean-up of operation cost.
- 5) Since GPCB has taken up the issue for finger print analysis with the help of NIO, Goa, the Committee opined to continue this practice. The NIO, Goa may be identified as a Nodal Agency for development of data base and identification of probable sources in future.
- 6) Mr. Tai, EE, GPCB informed that the appearance of tar ball is noticed in South Gujarat coast stretch starting from Ubhrat to Nargool (@ 100 Km) since 2008 onwards. It was also informed that around 200 tons of Tar Ball was observed and collected during 2011. The cleaning operation of the sea coast was carried out by GPCB and DPCC. The Cost incurred towards the cleaning operation has been borne by GPCB and Daman Pollution Control Committee (DPCC) for their respective jurisdiction. The GPCB has identified few probable source viz. ONGC Hajira, Cairn Energy Hajira, GSPC, Alang Ship Breaking Yard, Essar Refinery, Reliance Refinery Jamnagar, Mudra Port, I.O.C. Wadinagaretc. However, GPCB could not conclude the source of oil leakages and further formulation into tar ball formation. On similar line, he suggested name of suspected sources in Maharashtra Viz. ONGC, British Gas, Cairn Energy, BPCL, IPCL, IOC, JNPT, MBPT etc.
- 7) The Commandant Anil Sharma, Coast Guard has sharing his experience informed that sand contaminated with oil on the beach of Goa, Karnataka, Paradeep was noticed in past. The oil appearance on the coast may be primarily due to oil spill, washing up of bilges by the ship transiting through Indian Water as most of the Port does not have oil reception facility for bilges. He also informed that the jurisdiction of the beaches is the responsibility of Maritime Board whereas, in port area, the Port authority is responsible for mitigation measure and accordingly they need to create Tier-1 facility. Similarly, open sea beyond Port area up to 5 Kms is again the State responsibility of Maritime Board and in open sea after 12 Nautical Miles/economic interest of the country is the responsibility of the Coast Guard. He also expressed the difficulty to catch hold the ship/release bilges water into deep sea as they generally carry out this activity during transiting through Indian water.

- 8) Dr. Anirudh Ram, Scientist, NIO briefed that Tarballs appear along the entire coast of India, and their appearance on the west coast is usually seasonal, with high likelihood during May-October. Such seasonal appearance of crude tarballs on western coastal region of India is mainly because of the three causes; winds, wind-waves, and currents which transport the tar balls settled on the sea bed to the coast and get stranded on beaches during low tide. Winds along the coast have a well-defined annual cycle. Normally winds start blowing towards the coast in May. They keep getting stronger as the monsoon sets and are strongest in July-August. In September and October the winds weaken, and by November they are no more oriented towards the coast. The strength of waves on the ocean surface along the west coast exhibits a pattern that is pretty much the same as the winds: waves get stronger in May, and continue to increase in strength as the monsoon picks up. As a result, the waves are bigger, and the sea much rougher, during the monsoon. The waves along the coast are usually oriented towards the coast. Stronger the waves are, more effective is the transport of tarballs by them.
- 9) The Committee opined that the happening of tar ball formation is in particular time in a year i.e. onset of monsoon period. Generally the wind direction changes towards coast on the onset of monsoon and November onwards again its changes towards sea. Similarly, surface and sub-surface water current also plays major role in formation of tar ball. Hence the wind directions, water current, change of wind directions are major factors concerned for appearance of tar ball in Maharashtra, Goa and Gujarat coast.

The above issue needs to be focused because whatever sources of spillages outside the state jurisdiction, such spillages are most of the times entering to sea shore areas and may cause pollution in the said areas. This has to be controlled by State Authorities to maintain sea shore environment. MPCB can monitor such area, but corrective measures will have to be taken by Maritime Board as state agency and by the Coast Guard as a Central agency. The Committee proposes the following:

- Since inter-state areas are very well covered under the regulation of CPCB, it will be more appropriate that the CPCB may take policy decision with regard to the monitoring of the said area and imposing some norms in respect of the environment protection in the said area. The CPCB can take up the issue with MOEF, Govt. of India for further regulation about cost incurred towards environment damages.
- Similarly the issue of floating tar ball in Goa, Maharashtra and Gujarat needs to be tackled by laying down appropriate mechanism, wherein some scheme to be device to identify the sources, impose necessary conditions on such sources to create a fund for regulation of such sources in the form of remedial measures.
- It is also proposed to generate a Corpus Fund from all the stake holders under the leadership of ONGC being a major stake holder. The amount so collected should be spent to reimburse towards clean-up of operation cost.
- The CPCB may refer the matter to MoEF for identifying appropriate agency like NIO as a nodal agency to develop a proper data bank (finger print analysis) to identify the sources. The Coast Guard may assist them and can jointly carry out surveillance, which can also be further implementing agency for utilization of fund.

