

**Report on the ammonia gas leak that happened at M/s Coromandel International Ltd., Ennore on 26/12/2023 at 11.45 pm.**

The unit of M/s Coromandel International Ltd., Ennore is a fertiliser manufacturing facility and involved in the manufacture of Ammonium Phosphate Potash Sulphate (APPS) -4 lakhsTonnes/Annum. Ammonia is one of the raw materials for the manufacture of APPS. The unit has provided a double insulated ammonium storage tank of 12500 T capacity. The unit has obtained separate CTOs for APPS manufacturing and ammonia storage.

Ammonia is received via Ennore minor port through ships and transferred from there using 8" flexible HDPE pipeline of 2.5 km length laid underneath the sea bed. The depth of pipeline from the sea surface varies from 1' near the shore to 18' at the mooring point at port. The unit receives and unloads ammonia of 3000 to 8000 T once a month. Ammonia is generally imported from Iran or Saudi Arabia. Ammonia is received in liquid form at  $-33^{\circ}$  C and stored in the storage tank under the same condition. The pipelines are generally maintained at 2 Kg/cm<sup>2</sup> vapour pressure when no transfer of ammonia takes place. 36 hours prior to the transfer of ammonia from the ships, pre-cooling process of pipeline is carried out for pumping ammonia in liquid condition. The unit carries out the pre cooling and ammonia transfer operation only after getting the permission from Tamil Nadu Maritime Board.

A message was received from the unit at 12.45 am regarding the ammonia gas leakage happened during the pre cooling operation of the pipeline. Immediately the JCEE (M) Chennai along with DEE (Ambattur) and AEE (Manali) reached the site by 2.15 am and inspected the unit and the pipeline locations. The Joint Director, DISH who is the authority for the safety of the industrial operation was also present at the site. During the inspection the following observations were made:

- 1) The unit observed pressure drop in the pipeline at around 11.45 pm and simultaneously observed pungent odour around the storage terminal and near the material gate. The unit also immediately visited the pipeline location across the road and observed gas bubbles coming out of the pipeline at about 2' from the shore. The unit immediately started depressurising the pipeline by diverting the ammonia vapour to the flare and completed the operation within 20 minutes. The wind direction during the incident was observed to be WSW.

- 2) The unit monitored the ammonia level in the ambient air near the material gate using hand held monitor and found that the ammonia level was 28 ppm during the incident.
- 3) The unit also received information from the local Asst Commissioner of Police regarding the complaints received from the public on ammonia odour from Periakuppam, Chinnakuppam and few other villages.
- 4) Police and the District Administration along with the unit arranged ambulances and public transport for managing any emergency situation. Some people also received first aid due to eye irritation and breathing difficulties.
- 5) During inspection by TNPCB team, the ammonia level in the ambient air was monitored and found to be 3 ppm (2090 microgram/m<sup>3</sup> as against 400 microgram/m<sup>3</sup> on 24 hr average)) at 3.30 am near the Material gate. The ammonia level in the ambient air was also monitored in the following places
  - a. Near Ammonia pipeline leak identified area : 3 ppm at 3.51 am
  - b. At Thalankuppam village: 0 ppm at 4.02 am
  - c. At Periakuppam village: 0 ppm 4.09am
  - d. At Chinnakuppam village: 0 ppm 4.12 am
  - e. At Ernavur kuppam village: 0 ppm 4.15 am
  - f. At Kathivakkam Railway bridge: 0 ppm 4.17 am
  - g. At Ennore near Gulf Oil Gate: 0 ppm, 4.20 am
  - h. At Ennore bus depot: 0 ppm at 4.24 am
- 6) The sea water sample at the point of pipe line leakage was collected at 3.49 am and the ammonia level in the sea water was found to be 49 mg/L as against the marine discharge standard of 5 mg/L
- 7) At 4.30 am, mild ammonia odor was observed near the site and the Chinnakuppam and Periyakuppam villages..

The unit has informed that they will identify the exact location and the extent of pipeline damage within a day and will rectify the same before commencing the ammonia transfer. The unit has been instructed to carryout the above activity at war footing and to put the pipeline in operation only with the concurrence of competent authority ie Tamil Nadu Maritime Board.

