SUMMARY
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The present investigation was undertaken to study the impact of industrial effluents on the ground water quality in the vicinity of M/s Radiant Agro Ltd., M/s R.L. Steel Ltd. and M/s Maharashtra Distillery, village Naregaon, Tq. Aurangabad, Dist. Aurangabad. The investigation was also undertaken due to hue and cry on the hazardous effects due to above factories effluents in this area. The general complaints of the residents of the area was about deteriorating water quality used for drinking, domestic and irrigation purposes. To probe into the matter it was decided to investigate and plan to study the water and soil qualities in this area. During the study period from April 1998 to March 1999, following observations have been recorded.

The present investigation was planned to study water and soil quality in the areas affected by industrial effluents.

The sampling of river Sukhna was carried out throughout the year (April 1998 to March 1999).

Physico-chemical characteristics of the water inclusive of temperature, turbidity, pH, SS, TDS, DO, etc. were analysed periodically (monthly) and recording the observations of some of the characters in the field itself. The findings are not very
encouraging on the contrary they show very much polluted water quality in the area.

The colour of the water appeared from very faint yellow to redish, brownish, whereas temperature range of the water in different seasons was different but not with any remarkable observations.

The pH of the ground water did not show any significant variations. The maximum pH was in summer and minimum in winter. The suspended solids ranged from 8.0 to 186.0 mg/l and show much variations in different seasons. TDS also showed variations at different stations.

The oil and grease ranged in all seasons from 0.0 to 16.2 mg/l and showed seasonal variations. Phosphate values were from 0.001 to 6.8 mg/l and showed seasonal variations, whereas SO₄ values were from 48.0 to 918.0 mg/l with seasonal variations, whereas Fe, Ni, Pb, Cr in E₁ to E₄ stations, were obtained in very less and in E₅ station were nil.

**Soil quality:**

The pH of soil did not show any significant variations. The neutral pH was found in all three seasons. The chlorides ranged from 489.0 to 688.0 (S₁), 514.0 to 898.0 (S₂), 418.0 to 888.0 (S₃), 442.0 to 542.0 (S₄) and (S₅) 162.0 to 241.0 mg/l and did not show
much variations in different seasons. And nitrate, alkalinity showed variations at different stations.

The chromium ranged in all seasons from 0.0001 to 0.088 mg/l and showed seasonal variations. Nickel values were from 0.00016 to 0.087 mg/l and showed seasonal variations, whereas iron values were from 0.0034 to 0.0864 mg/l. The lead content of soil sample ranged from 0.001 to 0.0084 mg/l, whereas phosphate of the soil sample was between 1.6 to 6.10 mg/l. Sulphate of the soil sample ranged from 86.0 to 502.0 mg/l. At some of the sampling stations, Cr, Pb, Fe and Ni showed lot of variations according to the sampling stations located near or far from M/s R.L. Steel and M/s Radiant agro industries.

**Water quality of Sukhna river:**

To study the overall impact of storage of industrial effluent on the Sukhna river, five monitoring stations $E_1, E_2, E_3, E_4$ and $E_5$ were selected.

**Sukhna river:**

In winter and rainy seasons water was reddish brown. No remarkable seasonal changes in temperature were recorded, whereas pH of the water was observed on slightly alkaline side except in winter season. The DO ranged in all seasons from 0.0 to 6.1 mg/l and showed seasonal variations. BOD values were from
42.0 to 520.0 mg/l, with seasonal variations, whereas COD values were from 148.0 to 1610.0 mg/l, with seasonal variations. The chloride content of water ranged from 104.0 to 920.0 mg/l with seasonal variations. The total alkalinity of the water was between 62.0 to 536.0 mg/l with seasonal variations. Total hardness of the water ranged from 188.0 to 1020.0 mg/l at the some of the sampling stations Ca, Mg, Na and K showed variations according to the sampling stations, located near or far from the M/s Radiant agro industry.

The studies clearly indicated the severely polluted condition of ground water as well as soil qualities at most of the monitoring stations and the degree of pollution was very high which made it unsuitable for any human utilisation like domestic, industrial and agricultural.

Present investigation revealed water quality of Sukhana river deteriorated and unsafe for human consumption, and for industrial purposes.