

INVESTIGATION OF ACID RAIN OCCURRENCE IN THE FIVE DISTRICTS OF NORTHERN PROVINCE OF SRI LANKA

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Acid rain occurrence in Sri Lanka is not common because it does not have many sulphur dioxide and nitrogen dioxide generating industries. Sri Lanka is polluted by trans-boundary air pollutants from neighboring industrialized countries such as China and India. Acid rain is mainly a mixture of sulphuric and nitric acids depending upon the relative quantities of oxides of sulphur and nitrogen emissions.

The percentages of samples having below 5.6 of pH value known as acid rain were found to be 8.9%. The average rain water pH is in the range of 6.2 to 8.2 in all five districts of northern region. The rain water having lowest pH value of 5.17 was recorded at Vavuniya and minimum pH value of 5.39 at Mannar at some point. There are possibilities for the northern part of the country, especially in Vavuniya and Mannar districts, to have acid rain but they appear to be not affected by acid rain.

The turbidometric test method was used to determine the sulphate ions in the rain water samples and for nitrate determination; the nitrate ion-selective electrode was used. In addition, calcium and magnesium ions were determined by Atomic Absorption Spectrophotometer.

The average electric conductivity ranged from 10.1 to 117.9 $\mu\text{S}/\text{cm}$ with a minimum value of 1.08 at Mannar and the maximum value of 300 $\mu\text{S}/\text{cm}$ at Mullaithivu. The average concentration of sulphate was observed with the range from 2.4 to 6.3 ppm. The average concentration of nitrate observed was in the range from 2.1 to 10.6 ppm.

It was found that acid rain occurs in Sri Lanka, especially in Vavuniya and Mannar. There was clear evidence that the northern region is affected by trans-boundary pollution during the north east monsoon period of November to January.

