The term corrosion is applied for environmental deterioration of metals or alloys. The cost of corrosion in India has been estimated at Rupees 154 crores annually. Aluminium and its alloys have been extensively used in chemical industries. Its use for household purpose is also quite familiar.

Aluminium possesses good corrosion resistant property due to the stability of the oxide film generally formed on its surface. Aluminium is occasionally attacked by several chemicals, like, mineral acids and alkalies. With water containing chloride, bicarbonate and oxygen it leads to pitting type of corrosion. HCl is highly corrosive towards aluminium while HNO₃ and H₂SO₄ are very weak corrosive agents. A comparative study of corrosion of aluminium (28) was carried out in HCl and H₂SO₄ solutions. The following compounds were reported as corrosion inhibitors: n-Butyl amine, di-n-butyl amine, tri-n-butyl amine, o-toluidine, m-toluidine, piperidine, N-methyl piperidine, pyridine, nicotine, acridine, xanthine, furfuraldehyde, butyraldehyde, benzaldehyde,
Cinnamaldehyde, salicylaldehyde, thiomalic acid, thiobarbituric acid, thiodiglycollic acid and 2-mercaptobenzothiazole.

Corrosion of aluminium (2S) and its inhibition was studied at different temperatures (30°, 40° and 50°) in 1.0 M HCl solution and at 30° in 0.5 M HCl solution. Among the studied compounds n-butyl amine, di-n-butyl amine, furfuraldehyde, benzaldehyde and cinnamaldehyde were found very effective inhibitors for all the temperature ranges i.e. 30°, 40° and 50°.

In 0.5 M H₂SO₄ solution no effective inhibitor for aluminium was found. Most of the compounds used were found to afford less than 50% inhibition. The corrosion was measured by weight loss method in most of the cases; and in some cases galvanostatic measurements were also carried out. Mechanism of the inhibition has been discussed. It has been shown that the hydrogen overvoltage plays a significant role in the corrosion inhibitor on corrosion processes in acidic medium. The difference between cathodic potential and that of reversible hydrogen electrode potential in the given condition is called hydrogen overvoltage. The cathodic potential will vary as determined by Tafel's
rule. By extrapolating Tafel's slope in the absence and presence of inhibitors one can determine the current density in presence and absence of inhibitor. If the Tafel's equation gives a straight line slope and the inhibition efficiency agrees with the efficiency determined by weight loss method, one may conclude that the inhibition is due to adsorption of organic molecule on the surface.

Heat of adsorption was calculated and it was found that the value remained more than 12 K.Cal/mole which shows chemisorption.

Corrosion of aluminium (ES) was studied in 0.1 M trichloroacetic acid solution at 30° for 3 and 5 days duration. Trichloroacetic acid is highly corrosive agent for aluminium. Following compounds were also studied: Urea, thiourea, phenyl thiourea, diphenyl thiourea, o- and p-tolyl thiourea, thiomallic acid, thiobenzoic acid, thiobarbituric acid, thiodiglycollic acid, imidazoles, benzimidazole, 1,2,3 benzotriazole, sulphathiazole, 2-mercaptobenzo-thiazole and 2-mercaptobenzimidazole.

Among these compounds thiourea, phenyl thiourea, diphenyl thiourea and o- and p-tolyl thiourea, thiomallic
Acid, thiobenzoic acid, thiobarbituric acid, thiodiglycollic acid, 1,2,3 benzotriazole, 2-mercaptobenzothiazole, sulphathiazole and 2-mercaptopbenzimidazole affords more than 90% inhibition towards aluminium (2S). Mechanism of the inhibition has been reported. The inhibition exhibited by most of the compounds is controlled by cathodic reaction.

K$_2$S$_2$O$_8$ is one of the aggressive corrosive agent to aluminium (2S). In the present work corrosion of aluminium and its inhibition was studied in 0.1 M and 0.2 M K$_2$S$_2$O$_8$ solutions for 3 and 6 days duration at 30° and the following compounds: n-butyl amine, di-n-butyl amine, morpholine and piperidine exhibited excellent inhibition. Mechanism of inhibition has been discussed. In most of the cases both the electrodes were polarized to an equal extent. A plot of log $\frac{\theta}{1-\theta}$ verses logC gave straight line graphs in many cases.

The rate of corrosion of aluminium (2S) is notably less in neutral solution or in pure water. Normally surface water showed poor corrosivity for aluminium but occasionally high corrosion rate are observed under the condition of service. The rate of corrosion depends upon the impurities present in the solution or in metal.
In the present work influence of various cations like 
$\text{Ca}^{2+}$, $\text{Ba}^{2+}$, $\text{Co}^{2+}$, $\text{Ni}^{2+}$, $\text{Cr}^{3+}$, $\text{Fe}^{3+}$, $\text{Na}^{+}$, $\text{K}^{+}$, $\text{Mn}^{2+}$, 
$\text{Mg}^{2+}$, $\text{Cu}^{2+}$, $\text{Cd}^{2+}$, etc. towards corrosion of aluminium (2S) 
in distilled water was reported. Among these ions $\text{Fe}^{3+}$, 
$\text{Cu}^{2+}$, $\text{Mn}^{2+}$, etc. accelerated the rate of corrosion while 
other ions had tendency to retard the corrosion process. 
Following inhibitors were studied in local supply water: 
Urea, thiourea, phenyl thiourea, 1,3 di-o-tolyl thiourea, 
N,N' di-p-tolyl thiourea, furfuraldehyde, cinnamaldehyde, 
salicylaldehyde, benzimidazole, 2-mercaptobenzimidazole, 
2-mercaptobenzothiazole, 1,2,3 benzotriazole, sulphathiazole, 
1,5 diphenyl carbazide, thioacetamide, thiosemicarbazide, 
p-rosaniline and L-glutamine. Among these compounds 
1,3 di-o-tolyl thiourea, N,N' di-p-tolyl thiourea, 
cinnamaldehyde, 2-mercaptobenzimidazole, 2-mercaptobenzo-
thiazole, 1,2,3 benzotriazole, thioacetamide, 
thiosemicarbazide and p-rosaniline were found as effective 
corrosion inhibitors in local supply water. The mechanism 
of inhibition has been discussed. The inhibition may be 
due to adsorption process occurs on the surface of the 
specimen.

Normal reactions of water towards aluminium in 
working condition may take a long time. Hence it was