

CHARACTERISATION AND TREATMENT OF WASTE WATER FROM A CENTRIFUGE RUBBER LATEX CONCENTRATION UNIT

G. Madhu, K. E. George and D. Joseph Francis

Madhu, G., George, K. E. and Joseph Francis, D. (1991). Characterisation and treatment of waste water from a centrifuge rubber latex concentration unit. Indian J. Nat. Rubb. Res. 4 (2): 97-102.

Characterisation of the waste water from a centrifugal latex concentration unit was carried out. Conventional coagulants were tried to remove turbidity and chemical oxygen demand (COD) of the waste water. Aluminium chloride was found to be the best for the removal of both turbidity and COD.

Key words: Natural rubber, Waste water, Centrifugal latex concentration, Turbidity, COD, Coagulants, Effluent treatment.

G. Madu, K. E. George (for correspondence) and D. Joseph Francis, Department of Polymer Science and Rubber Technology, Cochin University of Science and Technology, Cochin-682 022, India.

INTRODUCTION

Natural rubber is harvested from *Hevea* trees in the form of latex which contains 30-40 per cent rubber hydrocarbon and small quantities of carbohydrates, lipids, proteins etc. The rubber hydrocarbon is separated by acid coagulation for the preparation of ribbed sheets, crepe and crumb. It is also processed in the form of latex concentrate by centrifugation and creaming. More than 90 per cent of the latex concentrate is obtained by centrifuging ammoniated field latex. Centrifuging is carried out to increase the dry rubber content (DRC) of latex from an initial value of 30-40 per cent to 60 per cent. Fig. 1 shows the flow diagram of a typical unit. In the centrifuging process, latex is split into two fractions, viz., latex concentrate with a DRC of around 60 per cent and skim latex containing 5-10 per cent dry rubber. The skim, which contains about 0.8 per cent ammonia, is coagulated with

sulphuric acid. The washings of centrifuging machines, the serum from skim coagulation and washings in skim rubber processing constitute the effluent.

Chemical, physical and bacteriological properties of effluents from different types of rubber processing factories have shown that the substances contained in them form excellent substrates for microbial proliferation generating high biological oxygen demand (BOD) and objectionable odour (Rubber Research Institute of Malaysia, 1974) and can be considered to be polluting (Ponniah, *et al*, 1975).

The aim of the present work is to assess the effectiveness of various coagulants like alum, aluminium sulphate, lime, ferrous sulphate, ferric chloride and aluminium chloride in the reduction of COD and turbidity from the effluents of a latex concentration unit with a view to reduce environmental pollution.