CONTENTS

LIST OF TABLES ii
LIST OF FIGURES iv

1. INTRODUCTION 1

2. REVIEW OF LITERATURE 5
  2.1. Toxicity evaluation 5
  2.2. Toxicity towards microalgae and cyanobacteria 6
  2.3. Siderophore production 13
  2.4. Biodegradation 14

3. MATERIALS AND METHODS 25
  3.1. Chemicals 25
  3.2. Culture growth and maintenance 25
  3.3. Determination of effective concentration of the toxicants 29
  3.4. Toxicity of PNP, PNSP and PAP towards cellular constituents 29
  3.5. Test chemicals versus carbon metabolism 33
  3.6. Test chemicals versus nitrogen metabolism 41
  3.7. Siderophore production by Nostoc spp. 46
  3.8. Biodegradation of PNP 48

4. RESULTS AND DISCUSSION 51
  4.1. Effective concentration of the toxicants 51
  4.2. Toxicity of PNP, PNSP and PAP towards cellular constituents 56
  4.3. Carbon metabolism 65
  4.4. Nitrogen metabolism 86
  4.5. Siderophore production 103
  4.6. Biodegradation 115

5. SUMMARY

6. REFERENCES 132