

Sr. No	CONTENTS	Page No.
1.	INTRODUCTION	1
2.	MATERIALS AND METHODS	22
	2.1 Water analysis	22
	2.2 Physico – Chemical characteristics of water	22
	A. Physical parameter	22
	1. Temperature	22
	B. chemical parameters	23
	1. pH	23
	2. Dissolved Oxygen (DO)	23
	3. Biochemical Oxygen Demand (BOD)	24
	4. Chemical Oxygen Demand (COD)	25
	5. Hardness	26
	6. Nitrogen Nitrate (NO ₃ -N)	27
	7. Calcium	28
	C. Heavy metal	28
	1. Lead	28
	2.3 Animal model	28
	2.3.1 Selection of animal	28
	2.4 Distribution, Habit and Habitat	29
	2.5 Classification of animal	29
	2.6 Collection of animals	30
	2.7 Maintenance of animals	30
	2.8 Heavy metals	30
	2.8.1 Test pollutants Pb	30
	2.8.2 Uses	31
	2.8.3 Effects	31
	2.8.4 Test solution	32
	2.8.5 Selection of test concentration	32
	2.9 Stock animals and acclimation	32
	2.10 Nature and Size of the animals	32

	2.11 Test Containers	33
	2.12 Test Water	33
	2.13 Measurements of toxicity and calculations	33
	2.14 Experimental exposures	33
	2.15 Biochemical Study	34
	2.15.1 Protein	34
	2.16 Enzyme study	35
	2.16.1 Acid phosphatase	36
	2.16.2 Alkaline phosphatase	37
	2.17 Light Microscopy	38
	2.17.1 Preparation of tissue for histology	38
	2.18 Haematoxylene eosine staining	40
	2.19 Histological demonstration of Collagen fibers	40
	2.20 Atomic Absorption Spectroscopy	42
	2.21 Statistical analysis	42
3	OBSERVATIONS	43
	3.1 Water analysis	43
	3.1.1 Physico – Chemical characteristics of water	43
	A. Physical parameter	43
	1. Temperature	43
	B. chemical parameters	44
	1. PH	44
	2. Dissolved Oxygen (DO)	44
	3. Biochemical Oxygen Demand (BOD)	44
	4. Chemical Oxygen Demand (COD)	45
	5. Hardness	45
	6. Nitrogen Nitrate (NO ₃ -N)	45
	7. Calcium	45
	C. Heavy metal	45
	1. Lead	45
	3.2 Animal behavior	45
	3.2.1 Behavior of bivalve after acute exposure	45
	3.2.2 Behaviors of bivalves after chronic toxicity	48

	3.2.2.1 Control group	48
	3.2.2.2 28 ppm Pb exposed group	48
	3.2.2.3 Only Ca ⁺⁺ exposed group	49
	3.2.2.4 Both Ca ⁺⁺ and Pb exposed	49
	3.3 Accumulation study	50
	3.3.1 Gills	50
	3.3.2 Mantle	51
	3.4 Biochemical study	51
	3.4.1 Protein	51
	3.4.1.1 8 day exposure	51
	A. Gills	51
	B. Mantle	51
	3.4.2.2 16 day exposure	52
	A. Gills	52
	B. Mantle	52
	3.5 Enzyme study	53
	3.5.1 Acid phosphatase	53
	3.5.1.1 8 days exposure	53
	A. Gills	53
	B. Mantle	53
	3.5.1.2 16 days exposure	53
	A. Gills	54
	B. Mantle	54
	3.5.2 Alkaline phosphatase	54
	3.5.2.1 8 days exposure	54
	A. Gills	55
	B. Mantle	55
	3.5.2.2 16 days exposure	55
	A. Gills	55
	B. Mantle	55
	3.6 Histological Observations	56
	3.6.1 Gills	56
	3.6.1.1 Control	56
	3.6.1.2 8 days exposure	56
	a. Pb treated	56

	b. Ca ⁺⁺ treated	56
	c. Remedial	57
	3.6.1.2 16 days exposure	57
	a. Pb treated	57
	b. Ca ⁺⁺ treated	58
	c. Remedial	58
	3.6.2 Mantle	59
	3.6.2.1 Control	59
	3.6.2.2 8 days exposure	59
	a. Pb treated	59
	b. Ca ⁺⁺ treated	59
	c. Remedial	60
	3.6.2.3 16 days exposure	60
	a. Pb treated	60
	b. Ca ⁺⁺ treated	60
	c. Remedial	61
	3.6.3 Collagen	61
	3.6.3.1 Control	61
	3.6.3.2 8 days exposure	61
	a. Pb treated	61
	b. Ca ⁺⁺ treated	62
	c. Remedial	62
	3.6.3.3 16 days exposure	62
	a. Pb treated	62
	b. Ca ⁺⁺ treated	62
	c. Remedial	63
4	DISCUSSION	65
5	SUMMARY AND CONCLUSION	90
6	BIBLIOGRAPHY	