66/62522

Proceedings of the Fourteenth **Annual Aquatic Toxicity** Workshop: November 2-4, 1987, Toronto, Ontario

Compte rendu des communications do quatorième atelier annuel sur la toxicitè aquatique: du 2-4 novembre, 1987, Toronto, Ontario

A. F. E. E.

Editors/Éditeurs

21, rue de Madrid, 21 75008 -PARIS Tél. (1) 22 14 67

K.R. Solomon A.J. Niimi and

May 1988

Mai 1988

Canadian Technical Report of Fisheries and Aquatic Sciences No. 1607

Rapport technique canadien des sciences halieutiques et aquatiques nº 1607

Available from Department of Fisheries and Oceans Bayfield Institute (GLLFAS) Burlington,Ontario L7R 4A6

S'adresser au ministerè des Pêches et Ocèans Institut Bayfield (LGLPSA) Burlington, Ontario L7R 4A6

G10573



Fisheries Pêches and Oceans et Océans

Canadä:

PREFACE

This report is the Proceedings of the Fourteenth Annual Aquatic Toxicity Workshop, held in Toronto, Ontario from November 2-4, 1987.

The Fourteenth Annual Aquatic Toxicity Workshop was one of a continuing series of annual Workshops in Canada on aquatic and environmental toxicology, covering topics from basic aquatic toxicology to applications in environmental monitoring, setting of regulations and guidelines, and the development of water quality criteria. These Workshops emphasize an informal exchange of ideas and knowledge on the topics among interested persons from industry, governments and universities. They provide an annual focus on the principles, current problems and approaches in aquatic toxicology. These Workshops are run by an incorporated National Steering Committee, and the proceedings are published with the support of the Department of Fisheries and Oceans.

The theme of the 1987 Workshop was "Laboratory-to-field Extrapolation Technology". Papers and posters were solicited on topics relating to research in aquatic toxicology. Seventy-three papers (5l oral and 2l poster) were presented and the topics covered a number of important areas: Toxicology of organic substances, effects of acid precipitation, toxicity of metals in fish, aquatic ecotoxicology, water quality and MISA, techniques in aquatic toxicity testing, biochemical indicators of toxicity and chemical contaminants and fish tumors.

EDITORS COMMENTS

This volume contains papers, abstracts or extended abstracts of all presentations at the Workshop. An author index and a list of participants are also included. The papers and abstracts were reviewed by steering committee members but were not subjected to external review. Comments on any aspects of individual contributions should be directed to the authors. The proceedings of the fish tumor symposium are being edited by C.D. Metcalfe and it is planned that they will be published as a refereed symposium proceedings by the American Fisheries Society.

DISCHARGE ON DEVELOPMENT OF STATION THERMAL	
DISCULLATION OF A FULL DEVELOPMENT AND CUDATULATION OF THE PROPERTY OF THE PRO	
WILLIE ISH EGGS - A COMBINED LARGRATORY AND	
	;
J.S. Griffiths 1, W.E. Carey 2, and J.F.B. Maher 2. Ontario Hydro, Research	
Division, Toronto, Ontario; and Ontario Hydro, Design and Development Division, Toronto, Ontario.	
	6
KINETICS OF THE DESPORPTION OF MERCURY FROM SELECTED FRESH-	
J.D. Wally, F.IVI. HIRDO' 11 I Hammark and Wite v. 3 1	:
Saskatchewan; and ³ Saskatchewan Fisheries Laboratory, Department of Tourism and Renewable Resources, Saskatoon, Saskatchewan.	
	9
A SURVEILLANCE PROGRAM TO ASSESS THE HEALTH OF AQUATIC	
A.R. MUNKITTICK and D.G. Dixon Department of Biology VI.	
Waterloo, Waterloo, Ontario	19
EFFECTS OF ACID PRECIPITATION	
EFFECTS OF TWO PH CONDITIONS ON VITELLOGENESIS IN RAINBOW	
R.L. Roy and S.M. Ruby. Department of Biology, Concordia University,	
	20
STUDIES ON INTERACTIONS BETWEEN COMPONENTS OF ELECTRO-	
- 211 M O WASIES	
D. Dive ¹ , P. Vasseur ² , O. Hanssen ¹ , and P.J. Gravil ² . ¹ INSERM U146,	
- omaine du CENTIA, D'ANCO Prancei and 40 C P. D. M	23
AN ENDOCRINE BASIS FOR GROWTH INHIBITION IN BROOK TROUT	
Variable Property of the Control of	
I. Ali ¹ , J.N. Fryer ² , and W.H. Tam ¹ . Department of Zoology, University of Western Ontario, London, Optorio, and 2Days	
or Ottawa, Ottawa, Ontarin	34
PHYSIOLOGICAL DISTURBANCES IN RAINBOW TROUT DURING ACID AND ALLIMINUM EXPOSURES	
R.C. Playle, G.G. Goss, and C.M. Wood. Department of Pints	
	16
	Ų
AND YOLK ABSORPTION IN THE FATHEAD MINNOW,	
A MILL MALES PROMPT AS	
R.L. Leino ¹ , J.H. McCormick ² and K.M. Janean ³ , In	
Omitorally of lyminesofa Diffith Minnocoto, 277 C. T.D.	
The state of the s	
International, Inc., Duluth, Minnesota.	7
viii	
Rapp. tech. can. sci. halieut. aquat. 160°	7

BIOESSAIS DE DIFFERENCIATION DES EFFETS DE L'ALUMINIUM CHEZ LES POISSONS EN RELATION AVEC LES PRECIPITATIONS ACIDES R. Van Coillie ¹ , G. Chevalier ² , A. Hontela ² , Y. Roy ² et C. Thellen ³ . ¹ Conservation et Protection, Environnement Canada, Montréal, Québec; ² Département des sciences biologiques, Université du Québec, Montréal, Québec; et ³ Ministère de l'Environnement Québec, Sainte Foy, Québec	42
TOXICITY OF METALS IN FISH	
ZINC INFLUX IN THE RAINBOW TROUT AND THE EFFECTS OF ACUTE CHANGES IN WATERBORNE [CA] D.J. Spry and C.M. Wood. Department of Biology, McMaster University, Hamilton, Ontario.	43
ACCUMULATION AND ELIMINATION OF INORGANIC AND ORGANIC FORMS OF DIETARY SELENIUM IN RAINBOW TROUT, SALMO GAIRDNER! M. Dutton and J.F. Klaverkamp. Department of Fisheries and Oceans, Freshwater Institute, Winnipeg, Manitoba.	44
THE TOXICITY OF POTASH BRINE TO ATLANTIC SALMON (SALMO SALAR) EGGS, ALEVINS AND FRY D.J. Martin-Robichaud and R.H. Peterson. Department of Fisheries and Oceans, Biological Station, St. Andrews, New Brunswick	45
THE EFFECTS OF WATER TEMPERATURE ON CHRONIC TOXICITY OF SODIUM ARSENATE TO RAINBOW TROUT (SALMO GAIRDNERI) S.M. McGeachy, M.G. Rankin, and D.G. Dixon. Department of Biology, University of Waterloo, Waterloo, Ontario.	46
THE EFFECT OF NICKEL PRE-EXPOSURE ON THE LETHAL TOLERANCES OF THE ZEBRAFISH (BRACHYDANIO RERIO) C. Searle, G. Reddy-Williams, and P. Anderson. Department of Biology, Concordia University, Montreal, Quebec.	50
AQUATIC ECOTOXICOLOGY	
SUSCEPTIBILITY OF DAPHNIA MAGNA, DAPHNIA PULEX, MACROCYCLOPS FUSCUS AND DIAPTOMUS SP. TO METHOPRENE UNDER ACUTE AND CHRONIC EXPOSURES C. Fortin and K.R. Solomon Department of Environmental Biology, University of Guelph, Guelph, Ontario; and Canadian Centre for Toxicology, Guelph, Ontario.	52
IMPACT OF AGRICULTURAL PYRETHROID PESTICIDES ON AQUATIC FAUNA	
W.R. Ernst. Conservation and Protection, Environment Canada, Dartmouth,	53

TO STREAM INVERTEBRATES	
D.D. Poirier and G.A. Surgeoner. Department of Environmental Biology, University of Guelph, Guelph, Ontario.	54
SETTING REALISTIC CLEAN-UP STANDARDS FOR METALS: HOW CLEAN IS CLEAN?	
J.P. Houghton. Dames and Moore Consultants, Seattle, Washington	55
ANALYSES DES COUTS-BENEFICES DE DIFFERENTS BIOESSAIS POUR UNE EVALUATION INTEGREE DE LA TOXICITE AQUATIQUE R. Van Coillie, N. Bermingham, C. Blaise et R. Vezeau. Conservation et Protection, Environnement Canada, Lonqueuil, Québec	57
TECHNIQUES IN AQUATIC TOXICITY TESTING	
MICRONUCLEI IN THE PERIPHERAL BLOOD OF RANA PIPENS AND THEIR USE IN AQUATIC TOXICOLOGY TESTS S.M. Tomlinson ¹ , R.D. Dinnen ² , C. Chopra ² , D. Hart ¹ , C. Urlando ² , and J.A. Heddle ² . ¹ IEC Beak Consultants Limited, Mississauga, Ontario; and ² Bio-Mutatech Inc., Toronto, Ontario.	59
APPLICATION OF A MICRONUCLEUS ASSAY TO THE PERIPHERAL BLOOD CELLS OF THE RAINBOW TROUT, SALMO GAIRDNERI R.D. Dinnen ¹ , S.M. Tomlinson ² , D. Hart ² , C. Chopra ¹ , and J.A. Heddle ¹ . Bio-Mutatech Inc., Toronto, Ontario; and ² IEC Beak Consultants Limited, Mississauga, Ontario.	69
CHROMOTEST - A COMPARATIVE REVIEW T.J. Vigerstad, R.D. Thomas, and C. Chopra. Bio-Response Systems Limited, Halifax, Nova Scotia, and Bethesda, Maryland.	79
SCREENING SEDIMENTS FOR TOXICITY: A WATER-CONCENTRATION RELATED PROBLEM C. van de Guchte and J.L. Mass-Diepeveen. Institute of Inland Water Management and Waste Water Treatment, Lelystad, The Netherlands	•
HEPATIC CATALASE ACTIVITY OF METAL-EXPOSED TROUT: A TEST OF THE METALLOTHIONEIN 'SPILL-OVER' HYPOTHESIS C.W. Laidley, P.V. Hodson, and B. Gray. Department of Fisheries and Oceans, Canada Centre for Inland Waters, Burlington, Ontario.	92
LOCOMOTOR ACTIVITY TESTS: METHODS AND APPLICATIONS E. Scherer, and R.E. McNicol. Department of Fisheries and Oceans, Freshwater Institute. Winning Manitoba	93
PREPARATION AND OPERATION OF A MOBILE AQUATIC TOXICITY RESEARCH UNIT	
G. Ozburn, D. Ruzton, and A. Smith. Department of Biology, Lakehead University, Thunder Bay, Ontario	95

EFFECTS OF CHLORPYRIFOS ON MACROINVERTEBRATES IN LITTORAL ENCLOSURES	
D.A. Jensen and J.C. Brazner. Center for Lake Superior Environmental Studies, University of Wisconsin-Superior, Superior, WI 54880 and U.S. EPA, Environmental Research Laboratory-Duluth, Duluth, MN 55804	101
THE POTENTIAL OF AVOIDANCE-PREFERENCE IN ESTABLISHING WATER QUALITY CRITERIA, BASED ON STUDIES OF SUBLETHALLY PRE-EXPOSED RAINBOW TROUT TO CR AND CU COMPOUNDS I. Anestis ¹ and R.J. Neufeld ² . ¹ Department of Civil Engineering, McGill	
University, Montreal, Quebec; and ² Department of Chemical Engineering, McGill University, Montreal, Quebec	108
BIOCHEMICAL INDICATORS OF TOXICITY ,	
L'ESSAI MICROPLAQUE DE LA TOXICITE L'ANALYSE FAITE À LA RONDE AVEC SELENASTRUM CAPRICORNUTUM C. Thellen ¹ , C. Blasie ² , Y. Roy ³ et C. Hickey ⁴ . ¹ Environnement Québec,	
Sainte Foy, Québec; ² Environnement Canada, Longueuil, Québec; ³ ECO-Recherches, Pointe-Claire, Québec; and ⁴ Ministry of Works and Development, Hamilton, New Zealand.	109
	109
INVESTIGATIONS ON THE TOXICOKINETICS OF CYANIDE IN JUVENILE RAINBOW TROUT (SALMO GAIRDNERI) Y. Bois and G. Leduc. Department of Biology, Concordia University,	
Montreal, Quebec.	110
MISE AU POINT D'INDICATEURS BIOCHIMIQUES ET CELLULAIRES E LA QUALITE D'UN ENVIRONNEMENT MARIN J. Pellerin-Massicotte, E. Pelletier, C. Rouleau et M. Pâquet. Institut	
national de la recherche scientifique, Océanologie, Rimouski, Québec	113
THE DEVELOPMENT OF A PROTEIN SYNTHESIS ASSAY FOR MONITORING THE ENVIRONMENTAL HEALTH OF FISH EXPOSED TO HEAVY METALS SUCH AS MERCURY	
R.V. Angelow and D.M. Nicholls. Department of Biology, York University, Downsview, Ontario.	127
LE MECHANISME BIOCHIMIQUE DE RECUPERATION EN SELENASTRUM CAPRICORNUTUM EXPOSE A CADIUM: LE METABOLISME	
ADENYLATE ET LA SYNTHESE DES MACROMOLECULES PA. Thompson, P. Couture et P.G.C. Campbell. Institut National de la Recherche Scientifique, Sainte Foy, Québec	135
ALTERATIONS IN SERUM CHEMISTRY IN RAINBOW TROUT (SALMO	
GAIRDNERI) WITH LIVER DEGENERATION AFTER PARTIAL HEPATECTOMY OR TREATMENT WITH CARBON TETRACHLORIDE OR ALPHA-NAPHTHYLISOTHIOCYANATE	
I.R. Smith, B.A. Zajdlik, H.W. Ferguson, and M.A. Hayes. Fish Pathology Laboratory, University of Guelph, Guelph, Ontario.	136

MEDAKA SENSITIVITY TO TRICHLOROETHYLENE AS AFFECTED BY SIZE W.W. Walker and C.S. Manning. Gulf Coast Research Laboratory, Ocean Springs, Mississippi	137
HAZARDOUS SUBSTANCES OBJECTIVES FOR PROTECTION OF THE QUALITY OF SURFACE WATERS PD. Hansen. Institute for Water, Soil and Air Hygiene of the Federal Health Office, Berlin, Federal Republic of Correction	138
A MODEL OF ORGANIC CHEMICAL BIOACCUMULATION BY FISH D. Mackay, F. Gorbas, and K. Clark. Institute for Environmental Studies, University of Toronto, Contrain	140
CHEMICAL CONTAMINANTS AND FISH TUMORS	
AN OVERVIEW OF EPIZOOTIC POLLUTION-RELATED NEOPLASMS IN BONY FISH	
J.C. Harshbarger. Registry of Tumors in Lower Animals, Smithsonian Institution, Washington, D.C.	141
POLYNUCLEAR AROMATIC HYDROCARBONS AND TUMORS IN BROWN BULLHEADS FROM THE BLACK AND CUYAHOGA RIVERS - CAUSE AND EFFECT?	
P.C. Baumann ¹ and M. Mac ² . ¹ U.S. Fish and Wildlife Service, Columbus, Ohio; and ² U.S. Fish and Wildlife Service, Ann Arbor, Michigan	142
32P-POSTLABELING DETECTION OF DNA ADDUCTS IN FISH FROM CHEMICALLY CONTAMINATED WATERWAYS A.E. Maccubbin ¹ , J.J. Black ¹ , and B.P. Dunn ² . Roswell Park Memorial Institute, Buffalo, New York; and ² B.C. Cancer Research Centre, Vancouver, British Columbia	43
DNA REPAIR AS ASSAYED IN VIVO: ITS IMPLICATIONS FOR THE MECHANISMS OF TUMORIGENESIS IN FISH T. Ishikawa. Japanese Foundation for Cancer Research, Tokyo, Japan 1	45
EFFECTS OF SOME POLYNUCLEAR AROMATIC HYDROCARBONS ON SMALL FISH CARCINOGENESIS MODELS W.E. Hawkins, W.W. Walker, R.M. Overstreet, J.S. Lytle, and T.F. Lytle. Gulf Coast Research Laboratory, Ocean Springs, Mississippi	45
HISTOPATHOLOGY OF FERAL AND EXPERIMENTAL WINTER FLOUNDER EXPOSED TO CONTAMINATED HARBOUR SEDIMENTS G. Gardner. U.S. Environmental Protection Agency Natragangett Phodo	
	17

STUDIES ON LIVER CARCINOGENESIS IN ENGLISH SOLE FROM PUGET SOUND, WASHINGTON, USA: I. PATHOLOGIC ANATOMY AND PATTERNS OF OCCURRENCE OF NEOPLASMS, PRENEOPLASTIC FOCAL LESIONS AND OTHER IDIOPATHIC HETATIC CONDITIONS; EVIDENCE FOR A XENOBIOTIC CHEMICAL ETIOLOGY M.S. Meyers, L.D. Rhodes, M.M. Krahn, and B.B. McCain. National Oceanic and Atmospheric Administration, Seattle, Washington.	14
STUDIES ON LIVER CARCINOGENESIS IN ENGLISH SOLE FROM PUGET SOUND, WASHINGTON, USA: II. UPTAKE, ACTIVATION AND DETOXICATION OF POLYCYCLIC AROMATIC HYDROCARBONS J.E. Stein, W.L. Reichert, M. Nishimoto, T.K. Collier, and U. Varanasi. National Oceanic and Atmospheric Administration, Seattle, Washington	149
EXPERIMENTAL INDUCTION OF LIVER TUMORS IN RAINBOW TROUT WITH EXTRACTS FROM CONTAMINATED SEDIMENTS C.D. Metcalfe ¹ , V.W. Cairns ² , and J.D. Fitzsimons ² . ¹ Environmental Resources Study Program, Trent University, Peterborough, Ontario; and ² Department of Fisheries and Oceans, Canada Centre for Inland Waters, Burlington, Ontario.	150
THE OCCURRENCE OF EPIDERMAL PAPILLOMAS AND LIVER NEOPLASIA IN WHITE SUCKERS (CATOSTOMUS COMMERSONI) FROM LAKE ONTARIO V.W. Cairns and J.D. Fitzsimons. Department of Fisheries and Oceans, Canada Center for Inland Waters, Burlington, Ontario	151
PATHOGENESIS OF SKIN AND LIVER NEOPLASMS IN WHITE SUCKERS (CATOSTOMUS COMMERSONI) FROM POLLUTED AREAS IN LAKE ONTARIO M.A. Hayes, I.R. Smith, T.L. Crane, T.E. Kocal, B.D. Hicks, and H.W. Ferguson. Fish Pathology Laboratory, University of Guelph, Guelph, Ontario.	153
POSTER SESSION	
THE UNIVERSITY OF TORONTO CULTURE COLLECTION (UTCC) J. Acreman. Department of Botany/Institute for Environmental Studies, University of Toronto, Toronto, Ontario.	154
DIFFERENCES IN CRAYFISH MERCURY RELATED TO SPECIES AND SITES, FIELD RESULTS AND PLANNING OF A FIELD EXPERIMENT M. Allard and P.M. Stokes. Institute for Environmental Studies, University of Toronto, Toronto, Ontario.	155
A TEST OF THE ABILITY OF STANDARD, SINGLE-SPECIES, BENCHTOP BIOASSAYS TO PREDICT ECOSYSTEM SENSITIVITY TO A TOXICANT U. Borgmann, E.S. Millard, and C.C. Charlton. Department of Fisheries and Oceans, Canada Centre for Inland Waters, Burlington, Ontario	156

RESPONSE OF THE MUSSEL ANADONTA GRANDI TO ACID AND ALUMINUM COMPARISON OF BLOOD IONS FROM LABORATORY AND FIELD RESULTS	
P.S.S. Chang, D.F. Malley, and J.D. Hueber. Department of Fisheries and Oceans, Freshwater Institute, Winnipeg, Manitoba.	157
ACCUMULATION OF ALKYLLEAD COMPOUNDS BY CAGED CLAMS Y.K. Chau ¹ , P.T.S. Wong ² , G.A. Bengert ¹ , and J. Wasslen ¹ . ¹ Environment Canada, Canada Centre for Inland Waters, Burlington, Ontario; and ² Department of Fisheries and Oceans, Canada Centre for Inland Waters, Burlington, Ontario.	162
EFFECT OF DIETARY DISODIUM ARSENATE HEPTAHYDRATE ON PROXIMATE DIET COMPONENT DIGESTIBILITY IN JUVENILE RAINBOW TROUT	
K.A. Cockell and J.W. Hilton. Department of Nutritional Sciences, University of Guelph, Guelph, Ontario.	163
GLUTATHIONE-S-TRANSFERASE ISOENZYMES IN WHITE SUCKERS (CATOSTOMUS COMMERSONI) WITH POLLUTION ASSOCIATED SKIN AND HEPATIC NEOPLASMS T.L. Crane, T.H. Pushmoro, P.A. Oving, L.P. Savita, and the second statements of the second statement of the second	
T.L. Crane, T.H. Rushmore, B.A. Quinn, I.R. Smith, and M.A. Hayes. Fish Pathology Laboratory, University of Guelph, Guelph, Ontario.	164
PHYTOPLANKTON DIFFERENTIAL SENSITIVITY STRESS: PREDICTING VULNERABILITY AND IDENTIFYING RESPONSE MECHANISMS R. Kent and P. Weinberger. Department of Biology, University of Ottawa, Ottawa, Ontario.	165
INFLUENCE OF CARCINOGENS ON ATTACHED MONOLAYERS CULTURES OF HEPATOCYTES FROM RAINBOW TROUT T.E. Kocal, B.A. Quinn, and M.A. Hayes. Fish Pathology Laboratory,	
University of Guelph, Guelph, Ontario	166
AQUATIC FATE AND EFFECTS OF 2,3,4,6-TETRACHLOROPHENOL K. Liber ¹ , K.R. Solomon ² , and N.K. Kaushik ¹ . ¹ Department of Environmental Biology, University of Guelph, Guelph, Ontario; and ² Canadian Centre for Toxicology, Guelph, Ontario.	168
CHEMICAL EVALUATION SEARCH AND RETRIEVAL SYSTEM (CESARS) R. MacFarlane. Hazardous Contaminants Coordination Branch, Ontario Ministry of the Environment, Toronto, Ontario	169
FACTORS THAT CAN INFLUENCE DIETARY ABSORPTION EFFICIENCY OF CHEMICALS BY FISHES	
A.J. Niimi. Department of Fisheries and Oceans, Canada Centre for Inland Waters, Burlington, Ontario.	170

THE ACUTE LETHALITY OF POTASSIUM CYANATE AND POTASSIUM THIOCYANATE TO RAINBOW TROUT AS INFLUENCED BY WATER HARDNESS AND PH W.R. Parker, K.G. Doe, and J.D.A. Vaughan. Conservation and Protection, Environment Canada, Dartmouth, Nova Scotia.	171
CANADIAN WATER QUALITY GUIDELINES AND THEIR USE IN WATER QUALITY MANAGEMENT R.C. Pierce. Water Quality Branch, Environment Canada, Hull, Quebec.	171
ASSESSING THE PRESENCE OF MICROENCAPSULATED PESTICIDES IN BIOLOGICAL SYSTEMS: A FIRST STEP C. Fortin and P.K. Sibley. Department of Environmental Biology, University of Guelph, Guelph, Ontario	175
REGRESSION AND DEVELOPMENT OF SKIN PAPILLOMAS AFFECTING WHITE SUCKERS (CATOSTOMUS COMMERSONI) FROM POLLUTED AREAS IN LAKE ONTARIO I.R. Smith, B.A. Zajdlik, H.W. Ferguson, and M.A. Hayes. Fish Pathology Laboratory, University of Guelph, Guelph, Ontario	177
PERSISTENCE AND DISSIPATION OF FORESTRY HERBICIDES IN A NORTHERN ONTARIO LAKE K.R. Solomon ¹ , G.R. Stephenson ² , C. Bowhey ² , and K. Liber ² . ¹ Canadian Centre for Toxicology, Guelph, Ontario; and ² Department of Environmental Biology, University of Guelph, Guelph, Ontario	178
HORMONAL REGULATION OF GLUCONEOGENESIS IN BROOK TROUT (SALVELINUS FONTINALIS) MAINTAINED IN LOW ENVIRON-MENTAL PH W.H. Tam, J. Sparks, and K. Wollschlager. Department of Zoology, University of Western Ontario, London, Ontario.	179
UPTAKE AND DEPURATION OF POLYCYCLIC AROMATIC HYDRO-CARBONS BY THE AMERICAN LOBSTER (HOMARUS AMERICANUS): RELATIONSHIP WITH TAINTING U.P. Williams ¹ , J.W. Kiceniuk ¹ , J.R. Botta ² , and L.L. Fancey ¹ . ¹ Science Branch, Department of Fisheries and Oceans, St. John's, Newfoundland; and ² Inspection Branch, Department of Fisheries and Oceans, St. John's, Newfoundland.	185
UPTAKE AND DEPURATION OF TETRAETHYLLEAD BY RAINBOW TROUT P.T.S. Wong ¹ , Y.K. Chau ² , and J. Yaromich ¹ . ¹ Department of Fisheries and Oceans, Canada Center for Inland Waters, Burlington, Ontario; and ² Environment Canada, Canada Centre for Inland Waters, Burlington, Ontario.	186
DEPRESSED MERCURY LEVELS IN BIOTA FROM ACID STRESSED LAKES NEAR SUDBURY, ONTARIO C.D. Wren and P.M. Stokes. Institute for Environmental Studies, University of Toronto, Toronto, Ontario	188
LIST OF AUTHORS	189
Can. Tech. Rep. Fish Aquat Sci. 1607	۲V

LIST OF PARTICIPANTS											•	٠.	191
WORKSHOP PROCEEDINGS													