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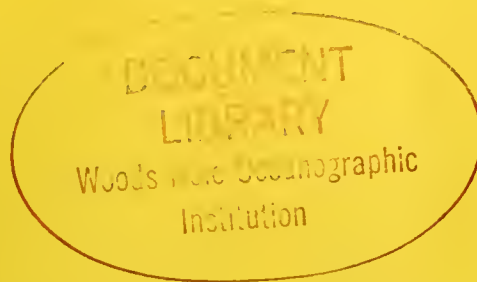
**National Status and Trends Program
for Marine Environmental Quality**



Mussel Watch Worldwide Literature Survey - 1991



Rockville, Maryland
November, 1991



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National Ocean Service
U.S. Department of Commerce

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Coastal Monitoring and Bioeffects Assessment Division
Office of Ocean Resources Conservation and Assessment
National Ocean Service
National Oceanic and Atmospheric Administration
U. S. Department of Commerce
Rockville, Maryland



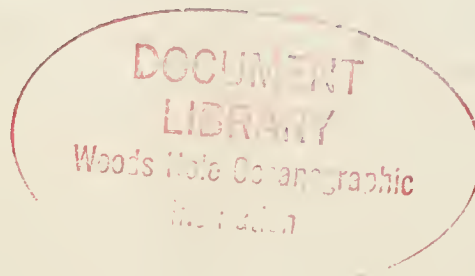
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Adriana Y. Cantillo



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United States
Department of Commerce

National Oceanic and
Atmospheric Administration

National Ocean Service

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ABSTRACT

The NOAA National Status and Trends Program includes the Mussel Watch Project in which mussels or oysters and sediments are collected from more than 240 sites in U. S. coastal waters. The bivalves and sediments are analyzed for more than 70 analytes including organic chemicals, selected major and minor elements, and ancillary parameters. This bibliography is the result of the compilation of a comprehensive collection of worldwide literature on the use of marine mussels or oysters as sentinel organisms for the study of coastal contamination. Information gathered will be used to compare results with those of the NS&T Mussel Watch Project. Five electronic bibliographical databases were searched and extensive manual searching was done to compile more than 1200 citations. An extensive index of species name, geographical location and analytes is included.

I. INTRODUCTION

One of the principal components of the NOAA National Status and Trends (NS&T) Program is the Mussel Watch Project in which mussels or oysters and sediments are collected from more than 240 sites in U. S. coastal waters. The bivalves and sediments are analyzed for a large suite of organic chemicals, selected major and minor elements, and ancillary parameters. The more than 70 analytes are listed in Table 1. The Mussel Watch Project is currently in its 6th year of operation. Descriptions of the program, sampling sites, and analytical results have been published. Current information on the NS&T Program can be obtained by writing the National Status and Trends Program.

The purpose of this bibliographic search is to compile a comprehensive collection of worldwide literature on the use of marine mussels or oysters as sentinel organisms for the study of coastal contamination. This compilation will be used to compare the results of such studies to those of the NS&T Mussel Watch Project.

II. DESCRIPTION OF LITERATURE SEARCH

Five electronic bibliographical databases in the DIALOG¹ system were searched in March of 1991 (Table 2). They were: BIOSIS PREVIEWS, CA SEARCH, NTIS, OCEANIC ABSTRACTS and AQUATIC SCIENCE ABSTRACTS. The complete description of these databases, including the journals and other types of publications abstracted, as well as time coverage, can be found in the DIALOG "blue sheets" and chapter descriptions. CA SEARCH is the electronic equivalent of Chemical Abstracts, while AQUATIC SCIENCE ABSTRACTS is that of Aquatic Science Abstracts, and BIOSIS PREVIEWS is that of

¹ DIALOG is available worldwide. In the United States, contact Dialog Information Services, Inc., 800 334 2564. Outside the United States, contact Dialog International Marketing, telex 334499, fax 415 858 7069.

Biological Abstracts. NTIS is prepared by the U. S. Dept. of Commerce and has no equivalent printed form. In addition, manual searching of Chemical Abstracts was done covering volumes 1 (1907) through 115 (issue 10) (1991). Major investigators in the field of marine mussel watch studies worldwide have been contacted for comments and suggestions.

The search strategy was designed to select citations mentioning mussels or oysters and any of the chemicals found in Table 1. The name and Chemical Abstracts Registry numbers of all the chemicals were used in the search strategy. The search was limited to citations in English. The major and trace element search was limited to citations published after 1976 due to the large number of entries found. As the compilation progressed, however, papers on other environmentally significant chemicals (such as dioxins), papers and reports in languages other than English, and older citations, were

Table 1. Chemicals determined as part of the NOAA National Status and Trends Program

Polycyclic aromatic hydrocarbons	Chlorinated pesticides other than DDT				
Biphenyl	Aldrin		Dieldrin		
Naphthalene	cis-Chlordane		trans-Nonachlor		
1-Methylnaphthalene	Heptachlor		Lindane		
2-Methylnaphthalene	Heptachlor epoxide		Mirex		
2,6-Dimethylnaphthalene	Hexachlorobenzene				
Acenaphthene	Polychlorinated biphenyls				
Acenaphthylene	PCB-8 PCB-18 PCB-28				
1,6,7-Trimethylnaphthalene	PCB-44 PCB-52 PCB-66				
Fluorene	PCB-101 PCB-105 PCB-118				
Phenanthrene	PCB-128 PCB-138 PCB-153				
1-Methylphenanthrene	PCB-179 PCB-180 PCB-187				
Anthracene	PCB-195 PCB-206 PCB-209				
Fluoranthene	Elements				
Pyrene	Ag	As	Cd	Cr	Cu
Benz(a)anthracene	Hg	Ni	Pb	Sb	Se
Chrysene	Sn	Zn			
Benzo[a]pyrene	Tributyltin species				
Benzo[e]pyrene	Tributyltin [bis(tri-n-butyltin)oxide]				
Perylene	Dibutyltin (degradation product)				
Dibenz[a,h]anthracene	Monobutyltin (degradation product)				
Benzo[b]fluoranthene					
Benzo[k]fluoranthene					
Indeno[1,2,3-cd]pyrene					
Benzo[g,h,i]perylene					
DDT and metabolites					
2,4'-DDD	4,4'-DDD				
2,4'-DDE	4,4'-DDE				
2,4'-DDT	4,4'-DDT				

Table 2. Databases searched

Database	Time coverage	Producer
AQUATIC SCIENCE ABSTRACTS	1978-1991	Cambridge Scientific Abstracts
BIOSIS PREVIEWS	1969-1991	BIOSIS, Inc.
CASEARCH	1967-1991	American Chemical Society
NTIS	1983-1991	National Technical Information Services
OCEANIC ABSTRACTS	1964-1991	Cambridge Scientific Abstracts

added to the database. Extensive use was made of the Mussel Watch studies literature compilation of Kidder (1977). Future updates of the search will include non-English citations and searches of other electronic databases.

III. NOAA MUSSEL WATCH BIBLIOGRAPHIC DATABASE

The results of the electronic search were edited for relevancy to the Mussel Watch concept and entered into the Apple Macintosh version of PRO-CITE², a bibliographic software system. The database resides at the NOAA National Ocean Service/Office of Ocean Resources Conservation and Assessment/Coastal Monitoring and Bioeffects Assessment Division (CMBAD), and will be updated on an ongoing basis.

When available, scientific species name, geographical location of the study, and chemicals have been added to the citation as index terms. In many instances, the bivalve species is not available either in the abstract or the key words stored in the electronic database. In such cases, only the generic terms "mussel" or "oyster" are found. The citation information has been checked against a printed source whenever possible to correct errors resulting from limitations of the electronic databases,³ and refine index terms. Organometallic species are listed as families. All the tributyltin compounds, for example, are indexed under organotins. If a paper covers a specific geographical area, then the location name, state/province and country were used in the index. For example, papers on Port Phillip Bay are indexed under the Bay name, Victoria and Australia. Papers covering large geographical areas such as synthesis papers of French or U. S. Mussel Watch Programs, are indexed using only the name of the country.

This compilation contains more than 1200 citations. Printed copies of the citations in the database are being collected at the Coastal Monitoring and Bioeffects Assessment Division office in Rockville, MD.

IV. RESULTS AND OBSERVATIONS

² PRO-CITE, Personal Bibliographic Software, Inc., PO Box 4250, Ann Arbor, MI 48106.

³ BIOSIS, one of the electronic databases covering the field of biology, lists some older citations in capital letters, omitting the use of italics or underlining for species names, and adding or omitting words in the titles.

The "classic" Mussel Watch studies of the 1970's in the United States were performed using the common blue mussel, *Mytilus edulis*, or the American oyster, *Crassostrea virginica*. These species are not available worldwide or indeed U. S.-wide. Therefore, other sentinel organisms, including various species of mussels (i.e., *Mytilus galloprovincialis*, *Mytilus californianus*, *Modiolus modiolus*, *Perna viridis*, and others), and oysters (i.e., *Crassostrea edulis*, *Crassostrea gigas*, and others) have been used. In cases where these mussels or oysters were not available, other molluscan species have been sampled but papers based on such samples have not been included in this bibliographic database. An exception is the case of the use of *Arca zebra* (commonly known as the turkey wing) in tropical waters since mussels and oysters are not found in large populations in some of these areas. The species cited in the bibliographic database are listed in Table 3.

Mussel Watch studies in freshwater bodies, such as those in the Great Lakes (North America), Lake Balaton (Hungary), and other locations, have not been included in the bibliographic database.

Complete citation information and citation number are listed in Appendix I in alphabetical order of the first author. The citation number is listed to the left of the entry. The subject indices are cross referenced to citation number in Appendix II.

Citations relevant to Mussel Watch studies but covering species other than mussels or oysters, and chemicals other than those listed in Table 1 are listed in Appendix III and are not included in the indices.

V. REFERENCES

Abbott, R. T. (1974) American Seashells. Van Nostrand, New York. 663 pp.

Abbott, R. T., and Dance, S. P. (1982) Compendium of Shells. E. P. Dutton, New York. 411 pp.

Bosch, D., and Bosch, E. (1982) Seashells of Oman. (K. Smythe, ed.) Longman Group Ltd., London. 206 pp.

Cotton, B. C., and Godfrey, F. K. (1938) The Molluscs of South Australia: Part I: The Pelecypoda. Government Printer, Australia. 314 pp.

Habe, T., and K. Ito (1970) Shells of the World in Colour: Vol. I: The Northern Pacific. Hoikusha Publishing Co. Ltd., Osaka. 176 pp.

Keen, A. M. (1971) Sea Shells of Tropical West America: Marine Mollusks from Baja California to Peru. Stanford University Press, Stanford, CA. 1064 pp.

Kidder, G. M. (1977) Pollutant levels in bivalves - a data bibliography. Report, EPA contract R-80421501, Scripps Institute of Oceanography, La Jolla, CA.

Table 3. Bivalve species cited in the Mussel Watch Bibliographic Database

Species	Common name	Length (mm)	Range
<i>Arca zebra</i> (Swainson 1833) ^{1,2}	Turkey wing	70	Southeastern U. S. to Brazil, Bermuda
<i>Aulacomya ater</i> (Molina 1782) ¹	Black ribbed mussel	150	Southeastern and southwestern South America
<i>Aulacomya maoriana</i> (Iredale 1915) ³ *	Maori mussel	80	New Zealand
<i>Brachydonates demissus plicatulus</i> +	Ribbed mussel	-	Eastern and Pacific U. S.
<i>Brachydonates variabilis</i>	Mussel	-	Lebanon
<i>Choromytilus meridionalis</i> (Krauss 1848) ⁴ †	Mussel	150	South Africa
<i>Crassostrea angulata</i> (Lamarck 1819) ⁵	Portuguese oyster	180	Portugal and introduced elsewhere
<i>Crassostrea brasiliiana</i> (Lamarck 1819) ⁶ ✕	Oyster	-	Brazil
<i>Crassostrea commercialis</i> †	Rock oyster	-	Pacific
<i>Crassostrea corteziensis</i> (Hertlein 1951) ⁷ †	Oyster	90	California to Panama
<i>Crassostrea cucullata</i> †	Rock oyster	-	Pacific
<i>Crassostrea edulis</i> ☆	Edible oyster	-	Eastern U. S., Western Europe and Mediterranean
<i>Crassostrea gasar</i> (Adonson) ⁸ †	Oyster	80-120	West Africa
<i>Crassostrea gigas</i> (Thunberg 1793) ^{1,2}	Pacific oyster	150	Western Canada to California, Japan and introduced elsewhere
<i>Crassostrea glomerata</i> (Gould 1850) ¹	Auckland rock oyster	90	New Zealand
<i>Crassostrea laperousei</i> (Schrencki 1861) ⁹ ▲	Oyster	350	Pacific
<i>Crassostrea lugubris</i>	Oyster	-	Thailand
<i>Crassostrea madrasensis</i>	Oyster	-	India
<i>Crassostrea margaritacea</i> (Lamarck 1819) ⁴	Cape rock oyster	180	South Africa to Mozambique
<i>Crassostrea rhizophorae</i> (Guilding 1828) ¹ ✕	Caribbean edible oyster	75	West Indies to Brazil
<i>Crassostrea rivularis</i> (Gould 1850) ¹⁰	Oyster	-	Indo-Pacific
<i>Crassostrea virginica</i> (Gmelin 1791) ^{1,2}	Eastern oyster	85	Gulf of St. Lawrence to Caribbean, Gulf of Mexico and introduced elsewhere
<i>Geukensia demissa</i> (Dillwyn 1817) ² +	Ribbed mussel	-	Eastern and Pacific U. S.

Table 3 (cont.)

Species	Common name	Length (m m)	Range
<i>Gryphaea angulata</i>	Portuguese oyster	-	Europe
<i>Isognomon alatus</i> (Gmelin 1791) ^{1,2}	Flat tree-oyster	75	Southeastern Atlantic U. S., Caribbean to Brazil, Bermuda
<i>Isognomon isognomon</i> (Linné 1758) ^{1,11}	Tree oyster	150	Tropics
<i>Malleus meridianus</i> (Cotton 1930) ^{1,11}	Hammer oyster	150	Australia
<i>Modiolus auriculatus</i> (Krauss 1848) ⁴	Mussel	50	Indo-Pacific to South Africa
<i>Modiolus barbatus</i> (Linné 1758) ⁵	Bearded horse mussel	60	Britain and Mediterranean
<i>Modiolus capax</i> (Conrad 1837) ^{2,7}	Fat horse mussel	80	California to Peru
<i>Modiolus demissus</i> +	Ribbed mussel	-	Eastern and Pacific U. S.
<i>Modiolus modiolus</i> (Linné 1758) ^{1,2}	Northern horse mussel	130	Arctic to mid latitudes
<i>Modiolus neozelanicus</i>	Mussel	-	New Zealand
<i>Mytella falcata</i> (d'Orbigny 1846) ¹	Falcate swamp mussel	70	Western Mexico to Ecuador, Venezuela to Uruguay
<i>Mytella strigata</i> (Hanley 1843) ¹²	Mussel	40	Mexico to El Salvador, Venezuela to Argentina
<i>Mytilus afer</i>	Mussel	-	Atlantic and Mediterranean
<i>Mytilus californianus</i> (Conrad 1837) ¹	California mussel	200	Alaska to Mexico
<i>Mytilus coruscus</i> (Goud 1861) ¹⁰	Hard shell mussel	130	Japan
<i>Mytilus demissus</i> (Dillwyn 1817) ¹³ +	Ribbed mussel	50-100	Gulf of St. Lawrence to Southeast Florida
<i>Mytilus demissus plicatus</i> +	Ribbed mussel	-	-
<i>Mytilus edulis</i> (Linné 1758) ¹	Blue mussel	75	Subartic seas worldwide
<i>Mytilus edulis aoteanus</i> (Powell 1958) ³	Mussel	60-120	New Zealand
<i>Mytilus edulis chilensis</i>	Mussel	-	Chile
<i>Mytilus edulis planulatus</i> (Lamarck 1819?) ³	Mussel	120	New Zealand and Australia
<i>Mytilus galloprovincialis</i> (Lamarck 1819) ¹	Mediterranean blue mussel	100	Western Europe and Mediterranean
<i>Mytilus magellanicus</i>	Mussel	-	Peru
<i>Mytilus minimus</i>	Mussel	-	Egypt
<i>Mytilus obscurus</i>	Mussel	-	Australia

Table 3 (cont.)

Species	Common name	Length (mm)	Range
<i>Mytilus platensis</i> (Orbigny 1846) ⁶ ●	Mussel	60	Southern Brazil to Argentina
<i>Mytilus smaradignus</i> ▼	Mussel	-	-
<i>Mytilus striagata</i>	Mussel	-	Mazatlan
<i>Mytilus trossulus</i>	Mussel	-	Russia
<i>Mytilus viridis</i> (Linné 1758) ¹	Green mussel	50	Indo-Pacific
<i>Ostrea angasi</i> (Sowerby 1871) ¹¹ ☆	Oyster	200	Australia and Tasmania
<i>Ostrea angulata</i>	Oyster	-	Mediterranean
<i>Ostrea circumpicta</i>	Oyster	-	Japan
<i>Ostrea edulis</i> (Linné 1758) ^{1,2}	Edible oyster	80	Eastern U. S., Western Europe and Mediterranean
<i>Ostrea equestris</i> (Say 1834) ^{2,6} ★	Crested oyster	50	Virginia to Caribbean to Brazil
<i>Ostrea gigas</i> ▲	Pacific yster	-	-
<i>Ostrea heffordi</i> (Finlay 1928) ³	Oyster	40-50	New Zealand
<i>Ostrea lurida</i> (Carpenter 1864) ^{1,2}	Native Pacific oyster	60	Alaska to Baja California
<i>Ostrea lutaria</i> (Hutton 1873) ³	Bluff oyster	70-100	New Zealand
<i>Ostrea piculata</i>	Oyster	-	Thailand
<i>Ostrea sandvicensis</i> (Sowerby 1871) ¹⁴	Hawaiian oyster	50	Hawaii
<i>Ostrea sinuata</i> (Lamarck 1819) ¹⁵ ☆	Pt. Lincoln oyster	150	New Zealand, South Australia
<i>Ostrea spinosa</i>	Oyster	-	Japan
<i>Perna canaliculus</i> (Gmelin 1791) ¹	Channel mussel	150	New Zealand
<i>Perna indica</i>	Mussel	-	India
<i>Perna perna</i> (Linné 1758) ¹	Brown mussel	70	West Africa and southern Caribbean
<i>Perna viridis</i> (Linné 1758)	Green-lipped mussel	-	Philippines
<i>Pinctada carcharium</i> (Jamieson 1901) ¹⁵	Shark Bay pearl oyster	120?	South Australia
<i>Pinctada fucata martensii</i> (Dunker) ¹⁰ ◆	Japanese pearl oyster	-	Japan
<i>Pinctada margaritifera</i> (Linné 1758) ¹⁶	Black lipped pearl oyster	300	Kuwait and Oman
<i>Pinctada vulgans</i>	Oyster	-	Malaysia
<i>Saccostrea commercialis</i>	Sydney rock oyster	-	Australia
<i>Saccostrea cucullata</i> ◆	Rock oyster	-	Indo-Pacific

Table 3 (cont.)

Species	Common name	Length (m)	Range
<i>Saccostrea echinata</i> (Quoy and Gaimard 1835) ⁹	Spiny oyster	-	Australia, Japan (Pacific?)
<i>Saccostrea glomerata</i> ■	Oyster	-	-
<i>Saccostrea iridescens</i> (Gray in Hanley 1854) ⁷	Iridescent oyster	250	Mexico to Peru
<i>Septifer bilocularis</i> (Linné 1758) ¹	Box mussel	250	Indo-Pacific
<i>Stavelia horrida</i> (Dunker 1856) ¹¹	Hairy mussel	250	Australia
<i>Tiostria lutaria</i> *	Oyster	-	-

* <i>Aulacomya ater maoriana</i> (Iredale 1915) listed in Powell (1979) may be the same as <i>A. maoriana</i> .
+ <i>Mytilus demissus</i> , <i>Mytilus demissus plicatus</i> , <i>Modiolus demissus</i> and <i>Brachydontes demissus plicatulus</i> are junior synonyms of <i>Geukensia demissa</i> . <i>Brachydontes</i> is the currently accepted spelling of <i>Brachydontes</i> (Turgeon et al., 1988).
‡ Form of <i>Aulacomya ater</i> (Kilburn and Rippey, 1982).
* <i>Crassostrea brasiliana</i> and <i>Crassostrea rhizophorae</i> are probably the same species.
◆ <i>Crassostrea commercialis</i> , <i>Crassostrea cucullata</i> , and <i>Saccostrea cucullata</i> are the same species. Probably the same as <i>Ostrea corteziensis</i> .
☆ Same as <i>Ostrea edulis</i> (Turgeon et al., 1988).
◆ Same as <i>Ostrea tulipa</i> Lamarck 1819 (Nicklès, 1950).
▲ Junior synonym for <i>Crassostrea gigas</i> (Turgeon et al., 1988).
● Probably same as <i>Mytilus edulis platensis</i> .
▼ Probably same as <i>Mytilus viridis</i> (Abbott and Dance, 1982).
☆ Same as <i>Ostrea sinuata</i> (Cotton and Godfrey, 1938).
★ Junior synonym of <i>Ostreola equestris</i> (Turgeon et al., 1988).
◆ Same as <i>Pinctada martensii</i> (Kira, 1965).
■ Same as <i>Crassostrea glomerata</i> (Powell, 1979).
* Same as <i>Ostrea lutaria</i> .

1, Abbott and Dance (1982); 2, Turgeon et al., 1988); 3, Powell (1979); 4, Kilburn and Rippey (1982); 5, Tebble (1976); 6, Rios (1985); 7, Olsson (1961); 8, Nicklès (1950); 9, Habe and Ito (1970); 10, Kira (1965); 11, Wells and Bryce (1986); 12, Keen (1971); 13, Abbott (1974); 14, Morris (1966); 15, Cotton and Godfrey (1938); 16, Bosch (1982).

Kilburn, R., and Rippey, E. (1982) Sea Shells of Southern Africa. McMillan South Africa Ltd., Johannesburg. 249 pp.

Kira, T. (1965) Shells of the Western Pacific in Color. Hoikusha Publishing Co. Ltd., Osaka. 224 pp.

Morris, P. A. (1966) A Field Guide to Pacific Coast Shells. Houghton Mifflin Co., Boston. 207 pp.

Nicklès, M. (1950) Mollusques Testacés Marins de la Côte Occidentale d'Afrique. Paris. 269 pp.

Olsson, A. A. (1961) Mollusks of the Tropical Eastern Pacific: Particularly from the Southern Half of the Panamic-Pacific Faunal Province (Panama to Peru): Panamic-Pacific Pelecypoda. Paleontological Research Institute, Ithaca, NY. 574 pp.

Powell, A. W. B. (1979) New Zealand Mollusca: Marine, Land and Freshwater Shells. Collins, Uckland. 500 pp.

Rios, E. C. (1985) Seashells of Brazil. Museum of Oceanography, University of Rio Grande, Rio Grande. 328 pp.

Tebble, N. (1976) British Bivalve Seashells: A Handbook for Identification. Royal Scottish Museum. 212 pp.

Turgeon, D. D., A. E. Bogan, E. V. Coan, W. K. Emerson, W. G. Lyons, W. L. Pratt, C. F. E. Roper, A. Scheltema, F. G. Thompson, and J. D. Williams (1988) Common and Scientific Names of Aquatic Invertebrates from the United States and Canada: Mollusks. American Fisheries Society Spec. Pub. 16, Bethesda, MD. 277 pp.

Wells, F. E., and Bryce, C. W. (1986) Seashells of Western Australia. Western Australian Museum, Perth. 207 pp.

VI. ACKNOWLEDGEMENTS

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APPENDIX I

Mussel Watch Worldwide Literature

(Chem. Abs. information included for older citations.)

- 1 **Abbe, G. R.** (1982) Growth, mortality, and copper-nickel accumulation by oysters, *Crassostrea virginica*, at the Morgantown steam electric station on the Potomac river, Maryland. J. Shellfish Res., 2(-):3-13.
- 2 **Abbe, G. R., and J. G. Sanders** (1986) Condenser replacement in a coastal power plant: copper uptake and incorporation in the American oyster, *Crassostrea virginica*. Mar. Environ. Res., 19(-):93-113.
- 3 **Abbe, G. R., and J. G. Sanders** (1990) Pathways of silver uptake and accumulation by the American oyster (*Crassostrea virginica*) in Chesapeake Bay. Est. Coastal Shelf Sci., 31(2):113-23.
- 4 **Abdel-Moati, A., and M. M. Atta** (1991) *Patella vulgata*, *Mytilus minimus* and *Hyale prevosti* as bioindicators for Pb and Se enrichment in Alexandria coastal waters. Mar. Pollut. Bull., 22(3):148-10.
- 5 **Abdullah, M. I., and I. Steffenak** (1988) The GEEP Workshop: trace metal analyses. Mar. Ecol., 46(1-3):27-30.
- 6 **Abel, P. D.** (1976) Effect of some pollutants on the filtration rate of *Mytilus*. Mar. Pollut. Bull., 7(12):288-91.
- 7 **Absanullah, M.** (1976) Acute toxicity of cadmium and zinc to seven invertebrate species from Western port, Victoria. Aust. J. Mar. Freshwater Res., 27(-):187-96.
- 8 **Adachi, K.** (1980) Mass fragmentographic determination of polymethylnaphthalene and polymethylphenanthrene in a crude oil and in marine organisms. Bull. Environ. Contam. Toxicol., 25(3):416-23.
- 9 **Adema, D. M. M., S. I. De Swaaf-Mooy, and P. Bais** (1972) Laboratorium onderzoek over de invloed van koper op mosselen (*Mytilus edulis*). T. N. O.-nieuws, 27(-):482-86 (German).
- 10 **Aftab, N.** (1987) Seasonal variation in biochemical composition of oysters, *Crassostrea madrasensis*, from Karachi coast. Karachi Univ. J. Sci., 15(1-2): 71-7.
- 11 **Ahmed, M.** (1975) Speciation in living oysters. Adv. Mar. Biol., 13(-): 357-97.
- 12 **Aissi, A., and D. Siblot** (1980) Etude du lac El-Mellah (Wilaya d'Annaba): les métaux lourds dans certains organismes. Ves Journées Etud. Pollutions, -(-):151-4 (French).

- 13 **Albright, L., T. G. Northcote, P. C. Olaffs, and S. Y. Szeto (1975)** Chlorinated hydrocarbon residues in fish, crabs, and shellfish of the Lower Fraser River, its estuary, and selected locations in Georgia Strait, British Columbia -1972-73. Pest. Monit. J., 9(-):134-40.
- 14 **Al-Dabbas, M. A. M., F. H. Hubbard, and J. McManus (1984)** The shell of *Mytilus* as an indicator of zonal variations of water quality within an estuary. Est. Coastal Shelf Sci., 18(3):263-70.
- 15 **Alexander, G. V., and D. R. Young (1976)** Trace metals in southern California mussels. Mar. Pollut. Bull., 7(1):7-9.
- 16 **Alexander, R., M. Cumbers, R. Kagi, M. Offer, and R. Taylor (1982)** Petroleum contamination of Cockburn Sound, Western Australia. Toxicol. Environ. Chem., 5(3-4):251-75.
- 17 **Al-Sabti, K., and B. Kurelec (1985)** Induction of chromosomal aberrations in the Mussel *Mytilus galloprovincialis* Watch. Bull. Environ. Contam. Toxicol., 35(-):660-5.
- 18 **Alzieu, C. (1986)** Organotin detrimental effects on oyster culture in France - evolution since antifouling paint regulation. In: Organotin Symposium (at) Oceans '86. Washington, D.C., September 23-5, 1986. IEEE Publishing Serv., New York, NY. 1130-4.
- 19 **Alzieu, C., and M. Heral (1984)** Ecotoxicological effects of organotin compounds on oyster culture. In: International Symp. on Ecotoxicological Testing for the Marine Environment. Ecotoxicological Testing for the Marine Environment. Vol. 2. Experience Papers: Tests with Specific Groups of Organisms. Tests with Specific Chemicals, Tests Using Specific Technology, Tests Studying Specific Effects, Case Study. Ghent, Belgium, September 12, 1983. Inst. for Marine Science Res., Brendene, Belgium. 187-96.
- 20 **Alzieu, C., M. Heral, Y. Thibaud, M. Dardignac, and M. Feuillet (1982)** Influence des peintures antisalissures a base d'organostanniques sur la calcification de la coquille d l'huître *Crassostrea gigas*. Rev. Trav. Inst. Pech. Marit., 45(-):101-16 (French).
- 21 **Alzieu, C., J. Sanjuan, P. Michel, M. Borel, and J. P. Dreno (1989)** Monitoring and assessment of butyltins in Atlantic coastal waters. Mar. Pollut. Bull., 20(1):22-26.
- 22 **Alzieu, C., J. Sanjuan, J. P. Deltreil, and M. Borel (1986)** Tin contamination in Arcachon Bay: effects on oyster shell anomalies. Mar. Pollut. Bull., 17(11):494-8.

- 23 **Amiard, J. C., C. Amiard-Triquet, B. Berthet, and C. Metayer** (1987) Comparative study of the patterns of bioaccumulation of essential (Cu, Zn) and non-essential (Cd, Pb) trace metals in various estuarine and coastal organisms. J. Exp. Mar. Biol. Ecol., 106(-):173-89.
- 24 **Amiard, J. C., C. Amiard-Triquet, B. Berthet, and C. Metayer** (1986) Contribution to the ecotoxicological study of cadmium, lead, copper and zinc in the mussel *Mytilus edulis*. I. Field study. Mar. Biol., 90(3):425-31.
- 25 **Amiard, J. C., C. Amiard-Triquet, and C. Metayer** (1985) Experimental study of bioaccumulation toxicity and regulation of some trace metals in various estuarine and coastal organisms. In: Symposia Biologica Hungarica. Vol. 29, Heavy Metals in Water Organisms. Tihany, Hungary, September 2 - 8, 1984. Akademiai, Budapest, Hungary. 313-24.
- 26 **Amiard-Triquet, A., B. Berthet, and J. C. Amiard** (1985) Ecotoxicological studies of the bioaccumulation of essential and non essential trace metals in various estuarine and coastal organisms. In: Heavy Metals in the Environment (International Conf.). Vol. I. Athens, Greece, September, 1985. CEP Consultants Ltd., Edinburgh, UK. 688-93.
- 27 **Amiard-Triquet, C., B. Berthet, C. Metayer, and J. C. Amiard** (1986) Contribution to the ecotoxicological study of cadmium, lead, copper and zinc in the mussel *Mytilus edulis*. II. Experimental study. Mar. Biol., 92(1): 7-13.
- 28 **Amico, V., G. Impellizzeri, G. Oriente, M. Piattelli, S. Sciuto, and C. Tringali** (1979) Levels of chlorinated hydrocarbons in marine animals from the central Mediterranean. Mar. Pollut. Bull., 10(10): 282-284.
- 29 **Anderlini, V. C., L. Al-Harmi, B. W. De Lappe, R. W. Risebrough, W. Walker, B. R. T. Simoneit, and A. S. Newton** (1981) Distribution of hydrocarbons in the oyster, *Pinctada margaritifera*, along the coast of Kuwait. Mar. Pollut. Bull., 12(2):57-62.
- 30 **Andersen, A. T., and B. B. Neelakantan** (1974) Mercury in some marine organisms from the Oslofjord. Norwegian J. Zool., 22(-):231-5.
- 31 **Anderson R. S.** (1978) Benzo[a]pyrene metabolism in the American oyster *Crassostrea virginica*. Ecol. Res. Ser. Monograph, EPA-600/3-78-009, US Environmental Protection Agency, Narragansett, RI, 18 pp.
- 32 **Anderson, R. S.** (1978) Developing an invertebrate model for chemical carcinogenesis: metabolic activation of carcinogens. Comp. Pathobiol., 4(Invertebr. Models Biomed. Res.):11-24.

- 33 **Anderson, R. S.** (1985) Metabolism of a model environmental carcinogen by bivalve mollusks. Mar. Environ. Res., 17(2-4):137-40.
- 34 **Anderson, R. S., and M. A. Angel** (1986) Biotransformation of benzo(a)pyrene by *Mercenaria mercenaria* and *Crassostrea virginica*. ASTM Spec. Tech. Publ. 921, 9(Aquat. Toxicol. Environ. Fate):241-51.
- 35 **Andreae, M. O., J. T. Byrd, and P. N. Froelich** (1983) Arsenic, antimony, germanium, and tin in the Tejo estuary, Portugal: modelling a polluted estuary. Environ. Sci. Technol., 17(-):731-7.
- 36 **Antunes, S. A., and Y. Itô** (1968) Chemical composition of oysters from São Paulo and Paraná, Brazil. Bolm. Inst. Oceanogr. S. Paulo, 17(-):71-88.
- 37 **Ariese, F., C. Gooijer, and N. H. Velthorst** (1990) Shpol'skii spectrofluorimetric determination of polycyclic aromatic hydrocarbons in biota. Anal. Chim. A., 232(-):245-51.
- 38 **Arimoto, R.** (1981) The use of mussels for monitoring polychlorinated biphenyl concentrations and environmental stresses. Diss. Abs. Int. B., 42(4):1346-7.
- 39 **Arimoto, R., and S. Y. Feng** (1982) Analyses of uptake of PCB's and trace metals by *Mytilus edulis* deployed near a dredge spoil disposal site in eastern Long Island Sound. J. Shellfish Res., 2(1):88.
- 40 **Arimoto, R., and S. Y. Feng** (1983) Changes in the levels of PCBs in *Mytilus edulis* associated with dredged-material disposal. In: Dredged-material Disposal in the Ocean, Kester, D. R., Ketchum, B. H., Duedall, I. W. (eds.), Wiley, New York, NY, 199-212.
- 41 **Ashton, A.** (1991) 'Oyster-watch' for monitoring coal ash lagoons in an environmentally sensitive are of Hong Kong. Mar. Pollut. Bull., 22(7): 334-9.
- 42 **Ashworth, M. J., and R. H. Farthing** (1981) Analysis of cadmium in marine samples. Int. J. Environ. Anal. Chem., 10(1):35-8.
- 43 **Asmund, G., P. Johansen, and B. W. Fallis** (1991) Disposal of mine wastes containing Pb and Zn near the ocean: an assessment of associated environmental implications in the Arctic. Chem. Ecol., 5(-):1-15.
- 44 **Aubert, M.** (1975) Le problème du mercure en Méditerranée. Rev. Int. Océanogr. Méd., 37-38(-):215-31 (French).
- 45 **Auckland Regional Water Board** (1988) Manukau Harbor Action Plan Shellfish Quality Survey. Tech. Pub. 53, Auckland Regional Water Board, Auckland, New Zealand.

- 46 **Auckland Regional Water Board** (1987) N. Z. Steel Limited environmental monitoring Program. First Annual Rep. 1985 - 1986. Tech. Pub. 44, Auckland Regional Water Board, Auckland, New Zealand, 19 pp.
- 47 **Auckland Regional Water Board** (1987) N. Z. Steel Limited Environmental Monitoring Program, Programme Review and Second Annual Report 1986 - 87. Tech. Pub. 46, Auckland Regional Water Board, Auckland, New Zealand.
- 48 **Auckland Regional Water Board** (1988) N. Z. Steel Limited Environmental Monitoring Program, Third Annual Report 1988. Tech. Pub. 52, Auckland Regional Water Board, Auckland, New Zealand.
- 49 **Auckland Regional Water Board** (1990) N. Z. Steel Limited environmental monitoring Program. Fourth Annual Rep. Tech. Pub. 68, Auckland Regional Water Board, Auckland, New Zealand, 45 pp.
- 50 **Auckland Regional Water Board** (1990) Shellfish Quality Survey. Tech. Pub. 86, Auckland Regional Water Board, Auckland, New Zealand, 78 pp.
- 51 **Auckland Regional Water Board** (1990) Shellfish Monitoring Methods. Tech. Pub. 96, Auckland Regional Water Board, Auckland, New Zealand, 37 pp.
- 52 **Auckland Regional Water Board** (1988) Tamaki Estuary water quality survey. Tech. Pub. 54, Auckland Regional Water Board, Auckland, New Zealand, 16 pp.
- 53 **Auffret M.** (1987) Histopathological changes related to chemical contamination in mussels (*Mytilus edulis*) from field and experimental conditions. ICES-CM-1987/E:39, International Council for the Exploration of the Sea, Copenhagen, Denmark, 12 pp.
- 54 **Auffret, M.** (1988) Histopathological changes related to chemical contamination in *Mytilus edulis* from field and experimental conditions. Mar. Ecol., 46(1-3):101-7.
- 55 **Ayling, G. M.** (1974) Uptake of cadmium, zinc, copper, lead and chromium in the Pacific oyster, *Crassostrea gigas*, grown in the Tamar river, Tasmania. Water Res., 8(-):729-38.
- 56 **Baby, K. V., and N. R. Menon** (1987) Salt forms of metals & their toxicity in the brown mussel *Perna indica* (Kuriakose and Nair). Ind. J. Mar. Sci., 16(2):107-109.
- 57 **Báez, B. P. F., and M. S. Bect** (1989) DDT in *Mytilus edulis*: statistical considerations and inherent variability. Mar. Pollut. Bull., 20(-):496-9.

- 58 **Bagge, P.** (1975) Pesticide residues in some Baltic animals - a review of selected literature. Pure Appl. Chem., 42(-):129-37.
- 59 **Bailey, S. K., and I. M. Davies** (1987) Tributyltin contamination in the Firth of Forth, Scotland, UK. Proc. Royal Soc. Edinburgh (Sec. B. Biol. Sci.), 93(3-4):561-2.
- 60 **Ballester, A., J. Miller, and M. Dunyach** (1980) Some pollutants present in marine sediments, animals, and plants in the coastal waters of Catalonia, Spain. Thalassia Jugosl., 16(2-4):275-88.
- 61 **Baluja Marcos, G.** (1975) Transference of environmental pesticides and PCB into species of western Mediterranean and Atlantic coasts. Environ. Qual. Saf. (Suppl), 3(Pesticides):793-7.
- 62 **Baluja, G., J. M. Franco, and M. A. Murado** (1973) Contaminación del medio por plaguicidas organoclorados. VI. Residuos de insecticidas y PCB en especies marinas, significado ecológico con la contaminación litoral nacional. Env. Pesq., 37(-):593-620 (Spanish).
- 63 **Barbagli, R., F. Baldi, and C. Leonzio** (1985) Trace metal assessment in sediment, molluscs and reed leaves in the Bay of Follonica (Italy). Mar. Environ. Res., 16(4):281-300.
- 64 **Batley, G. E., C. Fuhua, C. E. Brockbank, and K. J. Flegg** (1989) Accumulation of tributyltin by the Sydney rock oyster, *Saccostrea commercialis*. Aust. J. Mar. Freshwater Res., 40(1):49-54.
- 65 **Bayne, B. L.** (1989) Measuring the biological effects of pollution: the Mussel Watch approach. Water Sci. Technol., 21(10-11):1089-1100.
- 66 **Bayne, B. L.** (1978) Mussel watching. Nature (London), 275(-):87-88.
- 67 **Beaumont, A. R., and M. D. Budd** (1984) High mortality of the larvae of the common mussel at low concentrations of tributyltin. Mar. Pollut. Bull., 15(11):402-5.
- 68 **Bender, M. E., W. J. Hargis, R. J. Huggett, and M. H. Roberts** (1988) Effects of polynuclear aromatic hydrocarbons on fishes and shellfish: an overview of research in Virginia. Mar. Environ. Res., 24(-):237-41.
- 69 **Bender, M. E., R. J. Huggett, and H. D. Slone** (1972) Heavy metals - an inventory of existing conditions. J. Wash. Acad. Sci., 62(-):144-53.
- 70 **Berkhizer E.** (1974) Decrease of DDT and PCB in mussels. SCCWRP Annual Rep., So. California Coast. Water Res. Project, El Segundo, CA, 101-3.

- 71 **Bernhard, M., and A. Zattera (1975)** Major pollutants in the marine environment. Marine Pollution and Marine Waste Disposal. Proc., 2nd Intl. Congress, San Remo, Italy, December 17 - 21, 1973. Pergamon Press, New York, New York. 195-300.
- 72 **Berrow, S. D. (1991)** Heavy metals in sediments and shellfish from Cork harbour, Ireland. Mar. Pollut. Bull., 22(9):467-9.
- 73 **Berthet, B. (1989)** Characterization of physicochemical forms of soluble silver binding in filter mollusks. Oceanis, 15(4):401-9.
- 74 **Berthet, B. (1990)** Influence de la voie de contamination sur les formes physico-chimiques de l'argent chez *Crassostrea gigas* Thunberg (Effect of the contamination vector on the physico-chemical forms of silver in *Crassostrea gigas* Thunberg). Oceanis, 16(5):349-57.
- 75 **Berthet, B., C. Amiard-Triquet, and R. Martoja (1990)** Chemical and histological effects of depuration in *Crassostrea gigas* Thunberg previously exposed to silver. Water Air Soil Pollut., 50(3-4):355-69 (French).
- 76 **Berthou, F., G. Balouët, G. Bodennec, and M. Marchand (1987)** The occurrence of hydrocarbons and histopathological abnormalities in oysters for seven years following the wreck of the *Amoco Cadiz* in Brittany (France). Mar. Environ. Res., 23(2):103-33.
- 77 **Bertine, K. K., and E. D. Goldberg (1972)** Trace elements in clams, mussels, and shrimp. Limnol. Oceanogr., 17(-):877-84.
- 78 **Bertrand, G., and M. Mâcheboeuf (1925)** Sur la présence du nickel et du cobalt chez les animaux. C. R. Acad. Sci., Paris, 180(-):1380-3 (French).
- 79 **Bertrand, G., and R. Vladesco (1923)** The zinc content of certain invertebrate organisms. Bull. Soc. Chim., 33(-):341-5 (Chem. Abs., 17:2456, 1923).
- 80 **Beug, M. W., J. Calambokidis, J. Mowrer, and S. G. Herman (1979)** Selective retention of polychlorinated biphenyl components in the mussel, *Mytilus edulis*. Arch. Environ. Contam. Toxicol., 8(3):299-308.
- 81 **Bhosle, N. B., and S. G. P. Matondkar (1978)** Variation in trace metals in two populations of green mussel *Mytilus viridis* L. from Goa. Mahasagar, 11(3-4):191-4.
- 82 **Bjorseth, A., J. Knutzen, and J. Skei (1979)** Determination of polycyclic aromatic hydrocarbons in sediments and mussels from Saudafjord, west Norway, by glass capillary gas chromatography. Sci. Total Environ., 13(1):71-86.

- 83 Bland, S., D. R. Ackroyd, J. G. Marsh, and G. E. Millward (1982) Heavy metal content of oysters from the Lynher Estuary, U.K. Sci. Total Environ., 22(3):235-41.
- 84 Blumer, M., G. Souza, and J. Sass (1970) Hydrocarbon pollution of edible shellfish by an oil spill. Mar. Biol., 5(-):195-202.
- 85 Boalch, R., S. Chan, and D. Taylor (1981) Seasonal variation in the trace metal content of *Mytilus edulis*. Mar. Pollut. Bull., 12(8):276-80.
- 86 Bodansky, M. (1920) Biochemical studies on marine organisms. II. The occurrence of zinc. J. Biol. Chem., 44(-):399-407.
- 87 Boehm, P. D., J. E. Barak, D. L. Fiest, and A. A. Elskus (1982) A chemical investigation of the transport and fate of petroleum hydrocarbons in littoral and benthic environments the TSESIS oil spill. Mar. Environ. Res., 6(3):157-88.
- 88 Boehm, P. D., S. T. Freitas, E. A. Crecelius, R. E. Hillman, and J. Payne (1988) Patterns and relationships of trace organic and metal distributions in bivalves and sediments from the Pacific and Atlantic coasts. J. Shellfish. Res., 7(1):198-199.
- 89 Boh, C. U., and D. B. Harper (1983) Organochlorine and PCB residues in mussels from coastal waters of Northern Ireland. Rec. Agr. Res., 31(-):1-5.
- 90 Bohn, A. (1975) Arsenic in marine organisms from West Greenland. Mar. Pollut. Bull., 6(-):87-9.
- 91 Bokman, E., and R. B. Luaghlin (1989) A study of steady state and kinetic regulation of chloride ion and osmotic pressure in hemolymph of oysters *Crassostrea virginica* exposed to tri-n-butyltin. Arch. Environ. Contam. Toxicol., 18(6):832-8.
- 92 Boom, M. M. (1987) The determination of polycyclic aromatic hydrocarbons in indigenous and transplanted mussels (*Mytilus edulis* L.) along the Dutch coast. Int. J. Environ. Anal. Chem., 31(2-4):251-61.
- 93 Boon, J. P., and J. C. Duinker (1989) Occurrence of toxic PCB congeners in marine organisms: which should be monitored? Mar. Environ. Res., 28(1-4):142-3.
- 94 Boon, J. P., J. M. Everaarts, W. W. Kastoro, H. Razak, I. Sumanta, N. Sumarno, P. H. Nelissen, J. Stefels, and M. T. J. Hillebrand (1989) Cyclic organochlorines in epibenthic organisms from coastal waters around east Java. Neth. J. Sea Res., 23(4):427-39.

- 95 **Borchardt, T.** (1983) Influence of food quantity on the kinetic of cadmium uptake and loss via food and sea water in *Mytilus edulis*. Mar. Biol., 76(1): 67-76.
- 96 **Borchardt, T.** (1985) Relationships between carbon and cadmium uptake by *Mytilus edulis*. Mar. Biol., 85(3):233-44.
- 97 **Borchardt, T., S. Burchert, H. Hablitzel, L. Karbe, and R. Zeitner** (1988) Trace metal concentrations in mussels: comparison between estuarine, coastal and offshore regions in the southeastern North Sea from 1983 to 1986. Mar. Ecol., 42(1):17-31.
- 98 **Borthwick, P. W., A. J. Duke, A. J. Wilson, J. I. Lowe, J. M. Patrick, and J. C. Oberheu** (1973) Accumulation and movement of mirex in selected estuaries of North Carolina. Pest. Monit. J., 7(-):6-26.
- 99 **Bourcart, J., and L. Mallet** (1965) Pollution marine des rives de la région centrale de la mer Tyrrhénienne (baie de Naples) par les hydrocarbures polybenzéniques du type benzo-3,4-pyrene. C. R. Acad. Sci. Paris, 260(-):3729-34 (French).
- 100 **Bourget, E., and D. Cossa** (1976) Mercury content of mussels from the St. Lawrence Estuary and northwestern Gulf of St. Lawrence, Canada. Mar. Pollut. Bull., 7(12):237-9.
- 101 **Boyce, R., and W. A. Herdman** (1897) On a green leucocytosis in oysters. Proc. Royal Soc., 62(-):30-38.
- 102 **Boyden, C. R.** (1975) Distribution of some trace metals in Poole Harbour, Dorset. Mar. Pollut. Bull., 6(-):180-7.
- 103 **Boyden, C. R.** (1977) Effect of size upon metal content of shellfish. J. Mar. Biol. Assoc. U. K., 57(3):675-714.
- 104 **Boyden, C. R.** (1974) Trace element content and body sizes in molluscs. Nature, 251(-):311-4.
- 105 **Boyden, C. R., and D. J. H. Phillips** (1981) Seasonal variation and inherent variability of trace elements in oysters and their implications for indicator studies. Mar. Ecol., 5(1):28-40.
- 106 **Boyden, C. R., and M. G. Romeril** (1974) A trace metal problem in pond oyster culture. Mar. Pollut. Bull., 5(-):74-8.
- 107 **Breteler, R. J., J. M. Teal, and I. Valiela** (1981) Bioavailability of mercury in several north-eastern U.S. *Spartina* ecosystems. Est. Coastal Shelf Sci., 12(2):155-66.

- 108 **Britvic, S., and B. Kurelec** (1986) Selective potential for the activation of carcinogenic aromatic amines to bacterial mutagens in the marine mussel *Mytilus galloprovincialis*. Comp. Biochem. Physiol., 85(C):111-4.
- 109 **Britvic, S., and B. Kurelec** (1986) Selective activation of carcinogenic aromatic amines to bacterial mutagens in the marine mussel *Mytilus galloprovincialis*. Comp. Biochem. Physiol., 85C(1):111-14.
- 110 **Brodthmann, N. V.** (1970) Studies on the assimilation of 1,1,1-trichloro-2,2-bis (*p*-chlorophenyl) ethane (DDT) by *Crassostrea virginica* Gmelin. Bull. Environ. Contam. Toxicol., 5(-):455-62.
- 111 **Broman, D., and B. Ganning** (25) Uptake and release of petroleum hydrocarbons by two brackish water bivalves, *Mytilus edulis* L. and *Macoma baltica* (L.). Ophelia, 1(49-57):
- 112 **Broman, D., C. Naef, I. Lundbergh, and Y. Zebuhr** (1990) An in situ study on the distribution, biotransformation and flux of polycyclic aromatic hydrocarbons (PAHs) in an aquatic food chain (siston-*Mytilus edulis* L.-*Somateria mollissima* L.) from the Baltic: an ecotoxicological perspective. Environ. Toxicol. Chem., 9(4):429-42.
- 113 **Brooks, R. R., and M. G. Rumsby** (1965) The biogeochemistry of trace element uptake by some New Zealand bivalves. Limnol. Oceanogr., 10(-):521-8.
- 114 **Brooks, R. R., and M. G. Rumsby** (1967) Studies on the uptake of cadmium by the oyster *Ostrea sinuata* (Lamarck). Aust. J. Mar. Res., 15(-):53-61.
- 115 **Brouwer, M., D. Engel, C. Bonaventura, and J. Bonaventura** (1984) Toxic trace metals and trace-metal binding proteins in marine organisms - an overview. In: International Conf. Biology of Benthic Marine Organisms: Techniques and Methods as Applied to the Indian Ocean. Aurangabad, India, January 20 - 24 1984. A. A. Balkema, Rotterdam, Netherlands. 97-110.
- 116 **Brown, B. E.** (1988) Fate of metals in biota and biological interactions in the tropical coastal zone. Metals in Coastal Environments of Latin America, Springer-Verlag, New York, 110-21.
- 117 **Brown, B. E., and A. J. Kumar** (1990) Temporal and spatial variations in iron concentrations of tropical bivalves during a dredging event. Mar. Pollut. Bull., 21(3):118-23.
- 118 **Brown, B. E., and R. C. Newell** (1972) The effect of copper and zinc on the metabolism of the mussel *Mytilus edulis*. Mar. Biol., 16(-):108-18.

- 119 **Brown, D. A., R. W. Gossett, P. Hershelman, H. A. Schaefer, K. D. Jenkins, and E. M. Perkins (1983)** Bioaccumulation and detoxification of contaminants in marine organisms from southern California coastal waters. In: Proc., Symp. "Ocean Disposal 1980s." Waste Disposal Oceans: Minimizing Impact. Maximizing Benefits. Westview, Boulder, CO. 171-93.
- 120 **Brown, D. A., R. W. Gossett, and S. R. McHugh (1987)** Oxygenated metabolites of DDT and PCBs in marine sediments and organisms. In: Biological Processes and Wastes in the Ocean, Oceanic Processes in Marine Pollution, Vol. 1, Capuzzo, J. M., Kester, D. R. (eds.), Robert E. Krieger, Malabar, FL, 61-70.
- 121 **Brown, J. R. (1988)** Multivariate analysis of the role of environmental factors in seasonal and site-related growth variations in the Pacific oyster *Crassostrea gigas*. Mar. Ecol., 45(-):225-36.
- 122 **Bryan, G. W., P. E. Gibbs, L. G. Hummerstone, and G. R. Burt (1987)** Copper, zinc, and organotin as long-term factors governing the distribution of organisms in the Fal Estuary in Southwest England. Estuaries, 10(3):208-19.
- 123 **Bugg, J. C., J. E. Higgins, and E. A. Robertson (1967)** Chlorinated pesticide levels in the Eastern oyster (*Crassostrea virginica*) from selected areas of the South Atlantic and Gulf of Mexico. Pest. Monit. J., 1(3):9-12.
- 124 **Burdin, K. S., M. V. Krupina, and I. B. Savel'yes (1979)** Mollusks of the genus *Mytilus* as possible indicators of the content of heavy and transitional metals in seawater. Oceanol. Acad. Sci. USSR., 19(6):686-90.
- 125 **Burns, K. A., M. G. M. Ehrhardt, J. Tierney, G. Kananen, and D. Connelly (1990)** Organic and trace metal contaminants in sediments, seawater and organisms from two Bermudan harbours, North Atlantic Ocean. J. Exp. Mar. Biol. Ecol., 138(1-2):9-34.
- 126 **Burns, K. A., and J. L. Smith (1981)** Biological monitoring of ambient water quality: the case for using bivalves as sentinel organisms for monitoring petroleum pollution in coastal waters. Est. Coastal Shelf Sci., 13(4):433-43.
- 127 **Burns K. A., J. Smith, A. Murrell, and C. Haworth (1976)** Hydrocarbons in Westernport Bay. Pub. no. 164, Section 10, Interim Rep. Environmental Studies Section, Ministry of Conservation, Victoria, Australia, 21 pp.
- 128 **Burns, K. A., J. P. Villeneuve, V. C. Anderlin, and S. W. Fowler (1982)** Survey of tar, hydrocarbon and metal pollution in the coastal waters of Oman. Mar. Pollut. Bull., 13(7):240-7.

- 129 **Butler, A. C., and R. R. Sibbald** (1986) Isolation and gas chromatographic determination of saturated and polycyclic aromatic hydrocarbons in mussels. Bull. Environ. Contam. Toxicol., 37(4):570-8.
- 130 **Butler, P. A.** (1973) Organochlorine residues in estuarine mollusks, 1965-72 -- National Pesticide Monitoring Program. Pest. Monit. J., 6(-):238-246.
- 131 **Butler, P. A.** (1969) The significance of DDT residues in estuarine fauna. In: Chemical Fallout: Current Research on Persistent Pesticides. Proc., Rochester Conf. on Toxicity. Rochester, NY, 1968. Charles C. Thomas Pub., Springfield, IL. 205-20.
- 132 **Butler, P. A., C. D. Kennedy, and R. L. Schutzmann** (1978) Pesticide residues in estuarine mollusks, 1977 versus 1972 - National Pesticide Monitoring Program. Pest. Monit. J., 12(3):99-101.
- 133 **Butler, P. A., A. J. Wilson, and A. J. Rick** (1960) Effect of pesticides on oysters. Proc. Shellfish. Assoc., 51(-):23-32.
- 134 **Byrne, C. J., and L. R. DeLeon** (1986) Trace metal residues in biota and sediments from Lake Pontchartrain, Louisiana. Bull. Environ. Contam. Toxicol., 37(1):151-8.
- 135 **Cahnmann, H. J., and M. Kuratsune** (1957) Determination of polycyclic aromatic hydrocarbons in oysters collected in polluted water. Anal. Chem., 29(-):1312-17.
- 136 **Cajal Medrano, R., and E. A. Gutiérrez Galindo** (1981) Concentration et distribution du DDT dans les huîtres *Crassostrea gigas* et *Ostrea edulis* sur la cote de Basse Californie. Rev. Int. Océanogr. Méd., LXII(-):39-45 (French).
- 137 **Calabrese, A., R. S. Collier, D. A. Nelson, and J. R. MacInnes** (1973) The toxicity of heavy metals to embryos of the American oyster *Crassostrea virginica*. Mar. Biol., 18(-):162-6.
- 138 **Calambokidis, J., J. Mowrer, M. W. Beug, and S. G. Herman** (1979) Selective retention of polychlorinated biphenyl components in the mussel, *Mytilus edulis*. Arch. Environ. Contam. Toxicol., 8(3):299-308.
- 139 **Campos, N. H.** (1988) Selected bivalves for monitoring of heavy metal contamination in the Colombia Caribbean. In: Metals in Coastal Environments of Latin America, Springer-Verlag, New York, 270-5.
- 140 **Capelli, R., V. Contardi, B. Fassone, and G. Zanichchi** (1978) Heavy metals in mussels (*Mytilus galloprovincialis*) from the Gulf of La Spezia and from the promontory of Portofino, Italy. Mar. Chem., 6(-): 179-85.

- 141 Capuzzo, J. M., J. W. Farrington, P. Rantamaki, C. H. Clifford, B. A. Lancaster, D. F. Leavitt, and X. Jia (1989) The relationship between lipid composition and seasonal differences in the distribution of PCBs in *Mytilus edulis* L. Mar. Environ. Res., 28(1-4):259-64.
- 142 Capuzzo, J. M., and D. F. Leavitt (1988) Lipid composition of the digestive glands of *Mytilus edulis* and *Carcinus maenas* in response to pollutant gradients. Mar. Ecol., 46(1-3):139-45.
- 143 Carbajal, R. J. (1969) Fluctuación mensual de las larvas y crecimiento del mejillón *Perna perna* (L.) y las condiciones ambientales de la ensenada de Guatapanare, Edo. Sucre, Venezuela. Boletín del Inst. Oceanogr. Univ. de Oriente, Venezuela, 8(-):13-20 (Spanish).
- 144 Carpené, E., and S. G. George (1981) Absorption of cadmium by gills of *Mytilus edulis*. Mol. Physiol., 1(-):123-34.
- 145 Carriker, M. R., R. E. Palmer, L. V. Sick, and C. C. Johnson (1980) Interaction of mineral elements in sea water and shell of oysters (*Crassostrea virginica* Gmelin) cultured in controlled and natural systems. J. Exp. Mar. Biol. Ecol., 46(2-3):279-296.
- 146 Casper, V. L. (1967) Galveston Bay pesticide study - water and oyster samples analyzed for pesticide residues following mosquito control programs. Pest. Monit. J., 1(3):13-15.
- 147 Casper V. L., R. J. Hammerstrom, E. A. Robertson, J. C. Bugg, and J. L. Gaines (1969) Study of chlorinated pesticides in oysters and estuarine environment of the Mobile Bay area. Consumer Prot. Environ. Health Ser., US HEW, Cincinnati, OH, 47 pp.
- 148 Castagna, A., and F. Sarro (1975) Primi dati sulla di alcuni elementi metallici in *Mytilus galloprovincialis*, Lam. della costa orientale sicula, svelati con spettrofotometria per assorbimento atomico. Soc. Ital. Biol. Sper., Boll., 51(-):477-83 (Italian).
- 149 Castagna, A., and F. Sarro (1976) Studio spettrofotometrico ad assortimento atomico su alcuni elementi metallici in *Mytilus galloprovincialis* Lam. della costa orientale sicula. Bull. Pesca Piscic. Idrobiol., 31(-):171-5 (Italian).
- 150 Castagna, A., F. Sinatra, G. Castagna, A. Stoli, and S. Zafarana (1985) Trace element evaluations in marine organisms. Mar. Pollut. Bull., 16(10):416-19.
- 151 Castelli, M. G., G. P. Martelli, C. Spagone, L. Cappellini, and R. Fanelli (1983) Quantitative determination of polychlorinated biphenyls (PCB) in marine organisms analyzed by high-resolution gas chromatography selected ion monitoring. Chemosphere, 12(3):291-8.

- 152 **Castro, O., A. M. Ferreira, and C. Vale** (1990) Organochlorine compounds in the Portuguese oyster: importance of seasonal variations. Mar. Pollut. Bull., 21(11):545-7.
- 153 **Chagot, D., C. Alzieu, J. SanJuan, and H. Grizel** (1990) Sublethal and histopathological effects of trace levels of tributyltin fluoride on adult oysters *Crassostrea gigas*. Aquat. Living. Resour., 3(2):121-30.
- 154 **Champ, M. A., and F. L. Lowenstein** (1987) Organotin: the dilemma of high-technology antifouling paints. Oceanus, 30(3):69-77.
- 155 **Chan, H. M.** (1988) Accumulation and tolerance to cadmium, copper, lead and zinc by the green mussel *Perna viridis*. Mar. Ecol., 48(3):295-303.
- 156 **Chan, H. M.** (1988) A survey of trace metals in *Perna viridis* (L.) (Bivalvia: Mytilacea) from the coastal waters of Hong Kong. Asian Mar. Biol., 5(-): 89-102.
- 157 **Chan, H. M.** (1989) Temporal and spatial fluctuations in trace metal concentrations in transplanted mussels in Hong Kong. Mar. Pollut. Bull., 20(2):82-6.
- 158 **Chandratillake, M. R., V. Chand, M. Naqasima, E. Raboiliku, and A. Verma** (1983) Total zinc content in some of the foods in Fiji. Fiji Agr. J., 45(2):87-8.
- 159 **Chapman, A. C., and H. Linden** (1926) On the presence of lead and other metallic impurities in marine crustaceans and shell fish. Analyst, 51(-): 563-4.
- 160 **Chapman, A. C., and Linden. H.** (1926) On the presence of compounds of arsenic in marine crustaceans and shell fish. Analyst, 51(-):548-63.
- 161 **Chassard-Bouchard, C., J. F. Boutin, P. Hallegot, and P. Galle** (1989) Chromium uptake, distribution and loss in the mussel *Mytilus edulis*: a structural, ultrastructural and microanalytical study. Dis. Aquat. Org., 7(2):117-36.
- 162 **Cheng, Z., and A. Jensen** (1989) Accumulation of organic and inorganic tin in blue mussel, *Mytilus edulis*, under natural conditions. Mar. Pollut. Bull., 20(6):281-6.
- 163 **Chou, C. L., and J. F. Uthe** (1991) Effect of starvation on trace metal levels in blue mussels (*Mytilus edulis*). Bull. Environ. Contam. Toxicol., 46(3):473-8.

- 164 Chou, C. L., J. F. Uthe, and E. G. Zook (1978) Polarographic studies on the nature of cadmium in scallop, oyster, and lobster. J. Fish. Res. Bd. Can., 35(4):409-13.
- 165 Chow, T. J., C. B. Snyder, H. G. Snyder, and J. L. Earl (1976) Lead content of some marine organisms. J. Environ. Sci. Health, A11(-):33-4.
- 166 Chow, T. J., H. G. Snyder, and C. B. Snyder (1976) Mussels as an indicator of lead pollution. Sci. Total Environ., 6(-):55-63.
- 167 Chu, K. H., W. M. Cheung, and S. K. Lau (1990) Trace metals in bivalves and sediments from Tolo harbour, Hong Kong. Environ. Int., 16(1):31-6.
- 168 Claisse, D. (1989) Chemical contamination of French coasts: the results of a ten year Mussel Watch. Mar. Pollut. Bull., 20(10):523-8.
- 169 Claisse D. (1990) La contamination chimique de l'Adour, de la Nivelle et de la Bidassoa: Bilan des observations du R. N. O. matiere vivante. DRO-91-01-MR, IFREMER, Nantes, France, 9 pp.
- 170 Claisse D. (1991) La contamination chimique de l'Adour, de la Nivelle et de la Bidassoa: bilan des observations du R. N. O. matiere vivante. DRO-91-01-MR, IFREMER, Nantes, France, 9 pp.
- 171 Claisse D., B. Boutier, and A. Aranda (1990) La contamination l'étang de Bages-Sigean par le cadmium - premiere évaluation. DRO-90-07-MR, IFREMER, Nantes, France, 9 pp.
- 172 Claisse, D., and S. Simon (1991) Le 'Mussel Watch' français: résultats acquis sur les moules et les huîtres du littoral de la France. Exploitation de ces résultats dans le cas particulier de l'estuarie de la Seine. Estuaries and Coasts: Spatial and Temporal Intercomparisons. 19th, ECSA Symp. Olsen and Olsen, 341-7 (French).
- 173 Clark, R. C., and J. S. Finley (1973) Paraffin hydrocarbon patterns in petroleum-polluted mussels. Mar. Pollut. Bull., 4(11):172-6.
- 174 Clark, R. C., and J. S. Finley (1975) Uptake and loss of petroleum hydrocarbons by the mussel, *Mytilus edulis*, in laboratory experiments. Fish. Bull., 73(-):508-15.
- 175 Clegg, D. E. (1974) Chlorinated hydrocarbon pesticide residues in oysters (*Crassostrea commercialis*) in Moreton Bay, Queensland, Australia, 1970-1972. Pest. Monit. J., 8(-):162-6.
- 176 Clements, F. W., and R. C. Hutchinson (1939) The ash constituents of Australian fish. Aust. J. Exp. Biol. Med. Sci., 17(1):89-92.

- 177 **Cocchieri, R. A., A. Arnese, and A. M. Minicucci** (1990) Polycyclic aromatic hydrocarbons in marine organisms from Italian central Mediterranean coasts. Mar. Pollut. Bull., 21(1):15-8.
- 178 **Coimbra, J., and S. Carraca** (1990) Accumulation of iron, zinc, copper, and cadmium during the different stages of reproductive cycle in *Mytilus edulis*. Comp. Biochem. Physiol., 95C(2):265-70.
- 179 **Coleman, N., T. F. Mann, M. Mobley, and N. Hickman** (1986) *Mytilus edulis planutalus*: an "integrator" of cadmium pollution? Mar. Biol., 92(1): 1-5.
- 180 **Connor P. M., and J. E. Portmann** (1968) The toxicity of pesticides to marine animals, and further data on the occurrence of pesticides in oysters. ICES-CM-1968/K:13, International Council for the Exploration of the Sea, Copenhagen, Denmark, 8 pp.
- 181 **Contardi, V., R. Capelli, T. Pellacani, and G. Zanicchi** (1979) PCBs and chlorinated pesticides in organisms from the Ligurian Sea. Mar. Pollut. Bull., 10(10):307-11.
- 182 **Coombs, T. L.** (1972) The distribution of zinc in the oyster *Ostrea edulis* and its relation to enzymatic activity and to other metals. Mar. Biol., 12(-):170-8.
- 183 **Coombs, T. L.** (1974) The nature of zinc and copper complexes in the oyster *Ostrea edulis*. Mar. Biol., 28(-):1-10.
- 184 **Coombs, T. L., and P. J. Keller** (1981) *Mytilus* byssal threads as an environmental marker for metals. Aquat. Toxicol., 1(31902):291-300.
- 185 **Cooney J. J., F. D. Martin, W. H. Roosenberg, D. H. Freeman, and C. R. Bostater** (1979) Evaluation of Chester River oyster mortality. Report for Jan. 78 - Aug. 79. MDDNRTID8301, Maryland Dept. Natural Resources, Annapolis, MD, 130 pp.
- 186 **Cooper, R. J., D. Langlois, and J. Olley** (1982) Heavy metals in Tasmanian shellfish. 1 - Monitoring heavy metal contamination in the Derwent Estuary: use of oysters and mussels. J. Appl. Toxicol., 2(2): 99-109.
- 187 **Cossa, D.** (1988) Cadmium in *Mytilus* spp.: worldwide survey and relationship between seawater and mussel content. Mar. Environ. Res., 26(4):265-84.
- 188 **Cossa, D.** (1989) A review of the use of *Mytilus* spp. as quantitative indicators of cadmium and mercury contamination in coastal waters. Oceanol. A., 12(4):417-32.

- 189 Cossa, D., E. Bourget, D. Pouliot, J. Piuze, and J. P. Chanut (1980) Geographical and seasonal variations in the relationship between trace metal content and body weight in *Mytilus edulis*. Mar. Biol., 58(1): 7-14.
- 190 Cossa, D., E. Bourget, and J. Piuze (1979) Sexual maturation as a source of variation in the relationship between cadmium concentration and body weight of *Mytilus edulis* L. Mar. Pollut. Bull., 10(6):174-6.
- 191 Cossa, D., and E. Bourget (1980) Trace elements in *Mytilus edulis* L. from the estuary and Gulf of St. Lawrence, Canada: lead and cadmium concentrations. Environ. Pollut. (Ser. A), 23(1):1-8.
- 192 Cossa, D., M. Picard-Bérubé, and J. - P. Gouygou (1983) Polynuclear aromatic hydrocarbons in mussels from the estuary and northwestern Gulf of St. Lawrence, Canada. Bull. Environ. Contam. Toxicol., 31(1):41-7.
- 193 Cossa, D., and J. - G. Rondeau (1985) Seasonal, geographical and size-induced variability in mercury content of *Mytilus edulis* in an estuarine environment: a reassessment of mercury pollution level in the Estuary and Gulf of St. Lawrence. Mar. Biol., 88(1):43-9.
- 194 Cosson, A., C. Amiard-Triquet, and X. Grandier-Vazulle (1989) Copper, zinc and tin metabolism in relation to pollution caused by the activities of a marina. Oceanis, 15(4):411-8.
- 195 Costa, R. L., and L. R. Molins (1957) Determinación colorimétrica del plomo en el mejillón (*Mytilus edulis*) y en el agua de mar de la Ría de Vigo. Bol. Inst. Esp. Oceanogr., 84(-):1-13 (Spanish).
- 196 Couch, J. A., L. A. Courtney, J. T. Winstead, and S. S. Foss (1979) The American oyster (*Crassostrea virginica*) as an indicator of carcinogens in the aquatic environment. Animals as Monitors of Environmental Pollutants, National Academy of Sciences, Washington, DC, 65-84.
- 197 Coulson E. J. (1933) Studies on the nutritive value of oysters. Inv. Rep. 17, U. S. Dept. of Commerce, Bureau of Fisheries.
- 198 Coulson, E. J., H. Levine, and R. E. Remington (1932) Oysters and anemia. Am. J. Pub. Health, 22(-):1141-6 (Chem. Abs., 27:123, 1933).
- 199 Cowan A. A. (1978) Organochlorines in mussels from Scottish coastal waters. ICES-CM-1978/E:39, International Council for the Exploration of the Sea, Copenhagen, Denmark.
- 200 Cowan, A. A. (1981) Organochlorine compounds in mussels from Scottish coastal waters. Environ. Pollut. (Ser. B), 2(2):129-43.

- 201 **Crowley M., and C. Murphy** (1975) Heavy metals in mussels and in seawater from Irish coastal waters. ICES-CM-1975/E:29, International Council for the Exploration of the Sea, Copenhagen, Denmark, 10 pp.
- 202 **Culkin, F., and J. P. Riley** (1958) The occurrence of gallium in marine organisms. J. Mar. Biol. Assoc. U. K., 37(-):607-15.
- 203 **Cunningham, P. A., and M. R. Tripp** (1973) Accumulation and depuration of mercury in the American oyster *Crassostrea virginica*. Mar. Biol., 20(-):14-9.
- 204 **Cunningham, P. A., and M. R. Tripp** (1975) Accumulation, tissue distribution and elimination of ²⁰³HgCl₂ and CH₃-²⁰³HgCl in the tissues of the American oyster *Crassostrea virginica*. Mar. Biol., 31(4):321-4.
- 205 **Cunningham, P. A., and M. R. Tripp** (1975) Factors affecting the accumulation and removal of mercury from tissues of the American oyster *Crassostrea virginica*. Mar. Biol., 31(4):311-9.
- 206 **Cuzent, G.** (1863) Empoisonnement par les huîtres draguées sur un banc voisin d'une mine de cuivre; constatation de la présence du métal dans ces mollusques. C. R. Acad. Sci. Paris, 56(-):402-3 (French).
- 207 **Dahlgaard H.** (1981) Bioindicators for monitoring radioactive pollution of the marine environment. Experiments on the feasibility of *Mytilus* as a bioindicator in estuarine environments - with some comparisons to *Fucus*. RISOR443, Risoe National Lab., Roskilde, Denmark, 134 pp.
- 208 **Dai, S., G. Huang, and Y. Cai** (1989) Study of methyltin compounds in Tianjin Harbor. Zhongguo Huanying Kexue, 9(3):201-5 (Chinese).
- 209 **Dalla Venezia, L., V. U. Fossato, and S. Scarfi** (1983) First observations on physiological and behavioral response of *Mytilus galloprovincialis* to PCB Aroclor 1254 pollution. J. Etud. Pollut. Mar., 6(-):669-76.
- 210 **Daniel, R. J.** (1921) Seasonal changes in the chemical composition of the mussel (*Mytilus edulis*). Rep. Lancashire Sea Fish. Lab., 40(-):195-201.
- 211 **Dare, P. J., and D. B. Edwards** (1975) Seasonal changes in fresh weight and biochemical composition of mussels (*Mytilus edulis* L.) in the Conwy estuary, North Wales. J. Exp. Mar. Biol. Ecol., 18(-):89-97.
- 212 **Darracott, A., and H. Watling** (1975) The use of molluscs to monitor cadmium levels in estuaries and coastal marine environments. Trans. Roy. Soc. South Africa, 41(-):325-38.

- 213 **D'Aubert, S., P. Renon, and A. Corrado** (1975) Contaminazione da mercurio in alcuni frutti di mare del Mediterraneo. Arch. Vet. Ital., 26(5-6):153-5 (Italian).
- 214 **Davenport, J.** (1977) A study of the effects of copper applied continuously and discontinuously to specimens of *Mytilus edulis* (L.) exposed to steady and fluctuating salinity levels. J. Mar. Biol. Assoc. U. K., 57(1):63-74.
- 215 **Davenport, J., and X. Chen** (1987) A comparison of methods for the assessment of condition in the mussel (*Mytilus edulis* L.). J. Moll. Stud., 53(-):293-7.
- 216 **Davenport, J., and A. Manley** (1978) The detection of heightened sea-water copper concentrations by the mussel *Mytilus edulis*. J. Mar. Biol. Assoc. U. K., 58(1):128-32.
- 217 **Davies, I. M., J. Drinkwater, and J. C. McKie** (1988) Effects of tributyltin compounds from antifoulants on Pacific oysters (*Crassostrea gigas*) in Scottish sea lochs. Aquaculture, 74(3-4):319-30.
- 218 **Davies, I. M., J. C. McKie, and J. D. Paul** (1986) Accumulation of tin and tributyltin from antifouling paint by cultivated scallops (*Pecten maximus*) and Pacific oysters (*Crassostrea gigas*). Aquaculture, 55(-):103-14.
- 219 **Davies I. M., J. C. McKie, and J. D. Paul** (1986) Accumulation of tin and tributyl-tin from anti-fouling paint by cultivated scallops (*Pecten maximus*) and Pacific oysters (*Crassostrea gigas*). ICES-CM-1986/F:11, International Council for the Exploration of the Sea, Copenhagen, Denmark, 16 pp.
- 220 **Davies, I. M., and J. D. Paul** (1986) Accumulation of copper and nickel from anti-fouling compounds during cultivation of scallops (*Pecten maximus* L.) and Pacific oysters (*Crassostrea gigas* Thun.). Aquaculture, 55(-):93-102.
- 221 **Davies, I. M., and J. M. Pirie** (1980) Evaluation of a "Mussel watch" project for heavy metals in Scottish coastal waters. Mar. Biol., 57(2): 87-93.
- 222 **Davies, I. M., and J. M. Pirie** (1978) The mussel *Mytilus edulis* as a bio-assay organism for mercury in seawater. Mar. Pollut. Bull., 9(5):128-32.
- 223 **Davies I. M., and J. M. Pirie** (1978) Trace metals in mussels from the Scottish coast. ICES-CM-1978/E:33, International Council for the Exploration of the Sea, Copenhagen, Denmark, 7 pp.

- 224 **Davis, H. C.** (1961) Effects of some pesticides on eggs and larvae of oysters (*Crassostrea virginica*) and clams (*Venus mercenaria*). Com. Fisheries Rev., 23(12):8-23.
- 225 **De Kock, W. C.** (1983) Accumulation of cadmium and polychlorinated biphenyls by *Mytilus edulis* transplanted from pristine water into pollution gradients. Can. J. Fish. Aquat. Sci., 40(2):282-294.
- 226 **De Kock, W. C.** (1986) Monitoring bio-available marine contaminants with mussels *Mytilus edulis* in The Netherlands. Environ. Monit. Assess., 7(3): 209-20.
- 227 **De Voys, C. G. N.** (1987) Elimination of sand in the blue mussel *Mytilus edulis*. Neth. J. Sea Res., 21(-):75-8.
- 228 **De Vos, R. H.** (1969) Chlorinated biphenyls in fish, mussels and birds from the river Rhine and the Netherlands coastal area. Nature, 221(5186):1126-8.
- 229 **De Wolf, P.** (1975) Mercury content of mussels from west European coasts. Mar. Pollut. Bull., 6(4):61-3.
- 230 **De Zwaan, A., and W. C. De Kock** (1988) The development of a general biochemical stress index. Mar. Environ. Res., 24(1-4):254-5.
- 231 **Deival, C., S. Fournier, and Y. Vigneault** (1986) Polychlorinated biphenyl residues in some marine organisms from the Baie des Anglais (Baie Comeau, Quebec, Saint Lawrence Estuary). Bull. Environ. Contam. Toxicol., 37(6):823-829.
- 232 **Del Vecchio, V., P. Valori, A. M. Alasia, and G. Gualdi** (1962) Determination of arsenic in mollusks. Igiene Sanita Pubblica, 18(-):18-30 (Chem. Abs., 63:9445a, 1963).
- 233 **Delhaye, W., and D. Cornet** (1975) Contribution to the study of the effect of copper on *Mytilus edulis* during reproductive period. Comp. Biochem. Physiol., 50A(-):511-8.
- 234 **Di Salvo, L. H., H. E. Guard, L. Hunter, and A. B. Cobet** Hydrocarbons of suspected pollutant origin in aquatic organisms of San Francisco Bay: methods and preliminary results. In: The Microbial Degradation of Oil Pollutants, Ahearn, D. G., Meyers, S. P. (eds.), Center for Wetlands Resources, Pub. LSU-SG-73-01, Louisiana State University, Baton Rouge, LA, 205-20.
- 235 **Di Salvo, L. H., H. E. Guard, and L. Hunter** (1975) Tissue hydrocarbon burden of mussels as potential monitor of environmental hydrocarbon insult. Environ. Sci. Technol., 9(3):247-51.

- 236 **Dickson, A. G., and J. P. Riley** (1976) The distribution of short-chain halogenated aliphatic hydrocarbons in some marine organisms. Mar. Pollut. Bull., 7(-):167-169.
- 237 **Dixon, D., M. Kadim, and J. M. Parry** (1982) The detection of mutagens in the marine environment using the mussel *Mytilus edulis*. In: Mutagens in Our Environment, Vainio, Sorsa (eds.), Alan R. Liss, New York, NY, 297-312.
- 238 **Dixon, D. R., and I. McFadzen** (1987) Bis tributyltin oxide (TBTO) to an antifouling compound promotes SCE induction in the larvae of the common mussel *Mytilus edulis*. Mutagenesis, 2(4):312.
- 239 **Dixon, D. R., and H. Prosser** (1986) An investigation of the genotoxic effects of an organotin antifouling compound bistrabutyltin oxide on the chromosomes of the edible mussel *Mytilus edulis*. Aquat. Toxicol., 8(3): 185-196.
- 240 **Domotor S. L., and R. I. McLean** (1988) Environmental radionuclide concentrations in the vicinity of the Calvert Cliffs Nuclear Power Plant: 1985 - 1986. Maryland Power Plant Research Program, Annapolis, MD, 53 pp.
- 241 **Donkin, P., J. Widdows, S. V. Evans, C. M. Worrall, and M. Carr** (1989) Quantitative structure-activity relationships for the effect of hydrophobic organic chemicals on rate of feeding by mussels (*Mytilus edulis*). Aquat. Toxicol., 14(3):277-9.
- 242 **Dooley C. A.** (1986) Butyltin compounds in tissues. Final report. Oct. 1983 - Sept. 1985. NOSCTR1089, US Naval Ocean Systems Center, San Diego, CA, 27 pp.
- 243 **Dooley, C. A., and G. Vafa** (1986) Butyltin compounds and their measurement in oyster tissues. In: Organotin Symposium (at) Oceans '86. Washington, D.C., September 23-5, 1986. IEEE Publishing Serv., New York, NY. 1171-6.
- 244 **Dorn, P.** (1976) The feeding behaviour of *Mytilus edulis* in the presence of methylmercury acetate. Bull. Environ. Contam. Toxicol., 15(-):714-9.
- 245 **Douabul, A. Z. Z., H. T. Al-Saad, A. A. K. Al-Timari, and H. Al-Rekabi** (1988) Tigris-Euphrates delta a major source of pesticides to the Shatt Al-Arab river, Iraq. Arch. Environ. Contam. Toxicol., 17(3):405-18.
- 246 **Dow, R. L.** (1972) Pesticides in fish and shellfish. Maine Sea & Shore Fisheries. Res. Bull., 32(-):1-5.
- 247 **Downes K. M.** (1957) Manganese and zinc in the oyster, *Crassostrea virginica*. University of Maryland, 63 pp.

- 248 **Draper, W. M., and S. Koszdin (1991)** Speciation and quantitation of Aroclors based on PCB congener data: application to California mussels and white croaker. J. Agric. Food Chem., 39(8):1457-67.
- 249 **Drilmeyer, J. E. (1974)** Zn and Cu levels in the eastern oyster, *Crassostrea virginica*, from the lower James River. J. Wash. Acad. Sci., 64(-):292-5.
- 250 **D'Silva, C., and T. W. Kureishy (1978)** Experimental studies on the accumulation of copper and zinc in the green mussel. Mar. Pollut. Bull., 9(-):187-90.
- 251 **D'Silva, C., and S. Z. Qasim (1979)** Bioaccumulation and elimination of copper in the rock oyster *Crassostrea cucullata*. Mar. Biol., 52(4):343-6.
- 252 **Dubois, R. (1900)** Sur le cuivre normal dans la série animale. C. R. Soc. Biol. Paris, 52(-):393 (French).
- 253 **Dujmov, J., T. Vucetic, N. Picer, M. Picer, and M. Ahel (1978)** Some results of the monitoring of chlorinated hydrocarbons in organisms from the central Adriatic. In: Proc., Symp. on Pollution of the Mediterranean. Anatalya, Turkey, November 24 - 27, 1978. ICSEM/UNEP, Monaco.
- 254 **Duke, T. W., J. I. Lowe, and A. J. Wilson (1970)** A polychlorinated biphenyl (Aroclor 1254) in the water, sediment, and biota of Escambia Bay, Florida. Bull. Environ. Contam. Toxicol., 5(2):171-80.
- 255 **Dunn, B. P., and H. F. Stich (1976)** Monitoring procedures for chemical carcinogens in coastal waters. J. Fish. Res. Bd. Can., 33(9):2040-6.
- 256 **Dunn, B. P., and H. F. Stich (1976)** Release of the carcinogen benzo[a]pyrene from environmentally contaminated mussels. Bull. Environ. Contam. Toxicol., 15(4):398-401.
- 257 **Dunn, B. P., and H. F. Stich (1975)** Use of mussels in estimating benzo[a]pyrene contamination of the marine environment. Proc. Soc. Exp. Biol. Med., 150(1):49-51.
- 258 **Dunn, B. P., and D. R. Young (1976)** Baseline levels of benzo(a)pyrene in Southern California mussels. Mar. Pollut. Bull., 7(12):231-4.
- 259 **Durrani, S., and S. A. Siddiqui (1990)** Hydrocarbon concentrations om sediments and animal tissues from the coastal waters of Karachi. Mar. Pollut. Bull., 21(8):397-99.

- 260 Duursma, E. K., J. Nieuwenhuize, J. M. Van Liere, and M. T. J. Hillebrand (1986) Partitioning of organochlorines between water particulate matter and some organisms in estuarine and marine systems of The Netherlands. Neth. J. Sea Res., 20(2-3):239-52.
- 261 Ebdon, L., K. Evans, and S. Hill (1989) The accumulation of organotins in adult and seed oysters from selected estuaries prior to the introduction of UK regulations governing the use of tributyltin-based antifouling paints. Sci. Total Environ., 83(1-2):63-84.
- 262 Eganhouse, R. P., and D. R. Young (1976) Mercury in tissues of mussels off Southern California. Mar. Pollut. Bull., 7(-):145-7.
- 263 Ehrhardt, M. (1972) Petroleum hydrocarbons in oysters from Galveston Bay. Environ. Pollut., 3(-):257-71.
- 264 Ehrhardt, M., and J. Heinemann (May 1974) Hydrocarbons in blue mussels from the Kiel Bight. In: Proc., Symp., Marine Pollution Monitoring (Petroleum). Gaithersburg, MD, May, 1974. Spec. Pub. 409, National Bureau of Standards, Gaithersburg, MD. 221-5.
- 265 Ehrhardt, M., and J. Heinemann (1975) Hydrocarbons in blue mussels from the Kiel Bight. Environ. Pollut., 9(-):263-82.
- 266 Eisenberg, M., R. Mallman, and H. S. Tubiash (1980) Polychlorinated biphenyls in fish and shellfish of the Chesapeake Bay. Mar. Fish. Rev., 42(2):21-5.
- 267 Eisenberg, M., and J. J. Topping (1984) Organochlorine residues in shellfish from Maryland waters, 1976-1980. J. Environ. Sci. Health, B19(7):673-88.
- 268 Eisenberg, M., and J. J. Topping (1984) Trace metal residues in shellfish from Maryland waters, 1976-1980. J. Environ. Sci. Health, B19(7):649-71.
- 269 Elder, J. F., and P. V. Dresler (1988) Accumulation and bioconcentration of polycyclic aromatic hydrocarbons in a nearshore estuarine environment near a Pensacola (Florida) creosote contamination site. Environ. Pollut., 49(2):117-32.
- 270 Elliott, N. G., R. Swain, and D. A. Ritz (1985) The influence of cyclic exposure on the accumulation of heavy metals by *Mytilus edulis planulatus* (Lamarck). Mar. Environ. Res., 1(5):17-30.
- 271 Elliott, N. G., R. Swain, and D. A. Ritz (1986) Metal interaction during accumulation by the mussel *Mytilus edulis planulatus*. Mar. Biol., 93(3): 395-9.

- 272 **Eng, C. T., J. N. Paw, and F. Y. Guarin** (1989) The environmental impact of aquaculture and the effects of pollution on coastal aquaculture development in southeast Asia. Mar. Pollut. Bull., 20(7):335-43.
- 273 **Engel, D. W., and M. Brouwer** (1982) Detoxification of accumulated trace metals by the American oyster, *Crassostrea virginica*: laboratory vs. environment. In: Proc., Symp. Pollut. Mar. Org., Physiol. Mech. Mar. Pollut. Toxic., Vernberg, W. B. (ed.), Academic, New York, NY, 89-107.
- 274 **Engel, D. W.** (1983) The intracellular partitioning of trace metals in marine shellfish. Sci. Total Environ., 28(-):129-40.
- 275 **Ernst, W.** (1977) Determination of the bio-concentration potential of marine organisms. A steady state approach. II: Bioconcentration data for seven chlorinated pesticides in mussels (*Mytilus edulis*) and their relation to solubility data. Chemosphere, 11(731-40):
- 276 **Establier, R.** (1972) Concentración de mercurio en los tejidos de algunos peces, moluscos y crustáceos del golfo de Cádiz y caladeros del noroeste africano. Inv. Pesq., 36(-):355-64 (Spanish).
- 277 **Establier, R.** (1975) Concentración de cadmio en organismos marinos de la costa sudatlántica española. Inf. Tecn. Inst. Inv. Pesq., 26(-):1-8 (Spanish).
- 278 **Establier, R.** (1969) Contenido de cobre, hierro, manganeso y cinc de los ostiones (*Crassostrea angulata*) de las costas de Cádiz. Inv. Pesq., 33(-):335-45 (Spanish).
- 279 **Establier, R.** (1973) Contenido en mercurio de los mejillones (*Mytilus edulis*) silvestres y cultivados de la zona noreste española. Inv. Pesq., 37(-):101-6 (Spanish).
- 280 **Establier, R.** (1969) Estudios del contenido en cobre del agua de mar y ostiones (*Crassostrea angulata*) de las costas de Cádiz. Inv. Pesq., 33(-):69-86 (Spanish).
- 281 **Establier, R.** (1971) Estudios sobre la acumulación del cobre en el ostion, *Crassostrea angulata* (Lmk). Pub. Tecn. Dir. Gen. Pesca Marit., - (9):231-6 (Spanish).
- 282 **Establier, R.** (1972) Nota sobre el contenido en cobre de los ostiones (*Crassostrea angulata*) de las costas de Huelva. Inv. Pesq., 36(-):293-6 (Spanish).
- 283 **Establier, R., and M. Gutiérrez** (1968) Distribución anatomica de cobre, cinc, hierro y manganeso en el ostion, *Crassostrea angulata* (Lmk) y ostra, *Ostrea edulis* (L.). Inv. Pesq., 34(-):191-202 (Spanish).

- 284 **Establier, R., and E. Pasqual** (1974) Estudios del cobre, hierro, manganeso y cinc en ostiones (*Crassostrea angulata*) del golfo de Cádiz. Inv. Pesq., 38(-):371-84 (Spanish).
- 285 **Eustace, I. J.** (1974) Zinc, cadmium, copper and manganese in species of finfish and shellfish caught in the Derwent Estuary, Tasmania. Aust. J. Mar. Freshwater Res., 25(-):209-20.
- 286 **Everaarts, J. M.** (1990) Uptake and release of cadmium in various organs of the common mussel, *Mytilus edulis* (L.). Bull. Environ. Contam. Toxicol., 45(4):560-7.
- 287 **Farrington, J. W.** (1989) Bioaccumulation of hydrophobic organic pollutant compounds. In: Ecotoxicology: Problems and Approaches, Levin, S. A., Harwell, M. A., Kelly, J. R., Kimball, K. D. (eds.), Springer-Verlag, New York, 279-313.
- 288 **Farrington, J. W.** (1983) Bivalves as sentinels of coastal chemical pollution: the mussel (and oyster) watch. Oceanus, 26(-):18-29.
- 289 **Farrington, J. W., and J. M. Capuzzo** (1988) Bioaccumulation and biological effects of PCBs and PAHs in marine bivalve molluscs. A New Bedford Harbor USA case study. Pap. Chem. Cong. North Am., 3(1):28. 3rd Chemical Congress of North America held at the 195th ACS Meeting, June 5-10, 1988, Toronto, Ontario.
- 290 **Farrington, J. W., A. C. Davis, B. J. Brownawell, B. W. Tripp, C. H. Clifford, and J. B. Livramento** The biogeochemistry of polychlorinated biphenyls in the Acushnet river estuary, Massachusetts. Organic Marine Geochemistry, ACS Symp. Ser. 305, American Chemical Society, Washington, DC.
- 291 **Farrington, J. W., A. C. Davis, N. M. Frew, and A. Knap** (1988) ICES/IOC intercomparison exercise on the determination of petroleum hydrocarbons in biological tissues (mussel homogenate). Mar. Pollut. Bull., 19(8):372-80.
- 292 **Farrington J. W., A. C. Davis, B. W. Tripp, D. K. Phelps, and W. B. Galloway** (1987) Mussel Watch: measurements of chemical pollutants in bivalves as one indicator of coastal environmental quality. EPA600D87247, US Environmental Protection Agency, Narragansett, RI, 18 pp.
- 293 **Farrington, J. W., A. C. Davis, N. M. Frew, and K. S. Rabin** (1982) No. 2 fuel oil compounds in *Mytilus edulis*. Retention and release after an oil spill. Mar. Biol., 66(1):15-26.

- 294 Farrington J. W., R. W. Risebrough, P. L. Parker, A. C. Davis, B. W. De Lappe, J. K. Winters, D. Boatwright, and N. M. Freq (1982) Hydrocarbons, polychlorinated biphenyls and DDE in mussels and oysters from U.S. coast -1976-1978 - the Mussel Watch. Technical Report. WHOI-82-42, Woods Hole Oceanographic Inst., Woods Hole, MA, 106 pp.
- 295 Farrington, J. W., E. D. Goldberg, R. W. Risebrough, J. H. Martin, and V. T. Bowen (1983) U.S. "Mussel Watch" 1976-1978: an overview of the trace-metal, DDE, PCB, hydrocarbon, and artificial radionuclide data. Environ. Sci. Technol., 17(8):490-6.
- 296 Favretto, L. G., and L. Favretto (1984) Heavy metals at trace level in edible mussels (*Mytilus galloprovincialis* Lamarck) from the Gulf of Trieste. Z. Lebensm.-Unters. Forsch., 179(3):197-200.
- 297 Favretto, L., and L. G. Favretto (1984) Multivariate data analysis of some xenobiotic trace metals in mussels from the Gulf of Trieste. Z. Lebensm.-Unters. Forsch., 179(3):201-4.
- 298 Favretto, L., and L. G. Favretto (1984) Principal component analysis as a tool for studying interdependences among trace metals in edible mussels *Mytilus galloprovincialis* from the Gulf of Trieste, Italy. Z. Lebensm.-Unters. Forsch., 179(5):377-380.
- 299 Favretto, L., and L. G. Favretto (1984) Principal component analysis as a tool for studying interdependences among trace metals in edible mussels from the Gulf of Trieste. Z. Lebensm.-Unters. Forsch., 179(5):377-80.
- 300 Favretto, L., L. G. Favretto, and L. Felician (1987) Principal component analysis for the identification of pollution sources in mussel survey by trace metals. Z. Lebensm.-Unters. Forsch., 184(2):101-9.
- 301 Favretto, L., and L. G. Favretto (1988) Principal component analysis and pollution by trace elements in a mussel survey. J. Chemometrics, 3(-):301-8.
- 302 Favretto, L., L. G. Favretto, G. Marletta, Pertoldi, and M. Saitta (1989) Principal component analysis: a chemometric aid for classification of polluted and unpolluted mussels. Anal. Chim. A., 220(1):135-44.
- 303 Favretto, L., and F. Tunis (1970) Sui molluschi dell'alto Adriatico. Contenuto di metalli del mitilo durante un ciclo annuale (Metal content of the mussel during an annual cycle). Tec. Ital., 35(5):261-4 (Italian).
- 304 Favretto, L., and F. Tunis (1974) Typical level of lead in *Mytilus edulis* Lmk. from the Gulf of Trieste. Rev. Int. Océanogr. Méd., 33(-): 67-74.

- 305 **Fay, R. R., and L. W. Newland** (1972) Organochlorine insecticide residues in water, sediment, and organisms, Aransas Bay, Texas - September 1969 - June 1970. Pest. Monit. J., 6(-):97-102.
- 306 **Feng S. Y.** (1986) Trace metals and polychlorinated biphenyls in *Mytilus edulis* deployed in the vicinity of dredged material disposal sites in Long Island Sound. Available from author, International Council for the Exploration of the Sea, Charlottenlund, Denmark, 6 pp.
- 307 **Feng S. Y., J. K. Watson, R. Grillo, R. Arimoto, and A. J. Libbey** (1978) Preliminary observations on the levels of trace metals and PCB's in shellfish maintained on and near a dredge material disposal area in eastern Long Island Sound of the United States. Available from author, International Council for the Exploration of the Sea, Charlottenlund, Denmark, 9 pp.
- 308 **Fernandez Muino, M., J. De la Montana Miguelez, and J. Simal Lozano** (1991) A GC method for chlorinated pesticides and polychlorinated biphenyls in mussels. Chromatographia, 31(9-10):453-6.
- 309 **Ferreira, A. M., C. Cortesão, O. G. Castro, and C. Vale** (1990) Accumulation of metals and organochlorines in tissues of the oyster *Crassostrea angulata* from the Sado Estuary, Portugal. Sci. Total Environ., 97/98(-): 627-39.
- 310 **Ferrel, R. E., T. E. Carville, and J. D. Martinez** (1973) Trace metals in oyster shells. Environ. Lett., 4(-):311-6.
- 311 **Fischer, H.** (1989) Cadmium in seawater recorded by mussels: regional decline established. Mar. Ecol., 55(2-3):159-69.
- 312 **Fischer, H.** (1986) Influence of temperature, salinity, and oxygen on the cadmium balance of mussels *Mytilus edulis*. Mar. Ecol., 32(-):265-78.
- 313 **Fischer, H.** (1983) Shell weight as an independent variable in relation to cadmium content of molluscs. Mar. Ecol., 12(1):59-75.
- 314 **Fisher, W. S., F. E. Chu, and A. Wishkovsky** (1989) Immunosuppression of oysters by tributyltin. J. Shellfish Res., 8(2):437.
- 315 **Fisher, W. S., A. Wishkovsky, and F. - E. Chu** (1990) Effects of tributyltin on defense-related activities of oyster hemocytes. Arch. Environ. Contam. Toxicol., 19(3):354-60.
- 316 **Fitzgerald B. W.** (1962) An investigation of the zinc and zinc-65 in shellfish of Fishers Islands Sound and its estuaries. University of Maryland, 88 pp.

- 317 Flegel, A. R., M. Stephenson, M. Martin, and J. H. Martin (1981) Elevated concentrations of mercury in mussels (*Mytilus californianus*) associated with pinniped colonies. Mar. Biol., 49(-):45-8.
- 318 Flores Báez, B. P., and M. S. Galindo Bect (1989) DDT in *Mytilus edulis*: statistical considerations and inherent variability. Mar. Pollut. Bull., 20(10):496-9.
- 319 Foehrenbach, J. (1972) Chlorinated pesticides in estuarine organisms. J. Water Pollut. Cont. Fed., 44(-):619-24.
- 320 Foehrenbach, J., G. Mahmood, and D. Sullivan (1971) Chlorinated hydrocarbon residues in shellfish (Pelecypoda) from estuaries of Long Island, New York. Pest. Monit. J., 5(-):242-7.
- 321 Forster, R. C., and A. G. Howard (1989) The capillary gas chromatography-atomic absorption spectrometry of organotin and organolead compounds. Anal. Proc., 26(1):34-36.
- 322 Fortner, A. R., and L. V. Sick (1985) Simultaneous accumulations of naphthalene, a PCB mixture, and benzo(a)pyrene, by the oyster, *Crassostrea virginica*. Bull. Environ. Contam. Toxicol., 34(2):256-64.
- 323 Fossato, V. U. (1975) Elimination of hydrocarbons by mussels. Mar. Pollut. Bull., 6(-):7-10.
- 324 Fossato, V. U., and W. J. Canzonier (1976) Hydrocarbon uptake and loss by the mussel *Mytilus edulis*. Mar. Biol., 36(3):243-50.
- 325 Fossato, V., C. Nasci, and F. Dolci (1977) 3,4-Benzopirene e pirelene nei mitili, *Mytilus* sp., della laguna veneta (Levels of 3,4-benzopyrene and perylene in mussels, *Mytilus* sp., from the Laguna Veneta). Proc. 9th Cong. Italian Soc. of Marine Biology. Lacco Ameno d'Ischia, Italy, May 19 - 22, 1977. Societa Italiana di Biologia Marina, Italy (Italian).
- 326 Fossato, V. U., C. Nasci, and F. Dolci (1979) 3,4-Benzopyrene and perylene in mussels, *Mytilus* sp., from the Laguna Veneta, northeast Italy. Mar. Environ. Res., 2(1):47-54.
- 327 Fossato, V. U., and E. Siviero (1974) Oil pollution monitoring in the lagoon of Venice using the mussel *Mytilus galloprovincialis*. Mar. Biol., 25(-):1-6.
- 328 Fouassin, A., A. Fontaine, and A. Noirfalise (1973) Le mercure dans les poissons et crustaces consommés en Belgique. Arch. Belg. Med. Soc. Hyg. Med. Trav. Med. Leg., 31(-):145-52 (French).

- 329 **Fourie, H. O.** (1976) Metals in organisms from Saldanha Bay and Langebaan Lagoon prior to industrialisation. S. Afr. J. Sci., 72(4):110-3.
- 330 **Fowler, S. W., and G. Benayoun** (1976) Accumulation and distribution of selenium in mussel and shrimp tissue. Bull. Environ. Contam. Toxicol., 16(-):339-46.
- 331 **Fowler, S. W., M. Heyraud, and J. La Rosa** (1978) Factors affecting methyl and inorganic mercury dynamics in mussels and shrimp. Mar. Biol., 46(3):267-76.
- 332 **Fowler, S., and B. Oregioni** (1974) Heavy metals in mussels from the north western Mediterranean Sea. Les Journées Etud. Pollutions, (-):179-80. CIESM, Monaco.
- 333 **Fowler, S. W., and B. Oregioni** (1976) Trace metals in mussels from the NW Mediterranean. Mar. Pollut. Bull., 7(2):26-9.
- 334 **Fox, D. L., and W. R. Coe** (1943) Biology of the California sea mussel (*Mytilus californianus*). II. Nutrition, metabolism, growth and calcium deposition. J. Exp. Zool., 93(-):205-49.
- 335 **Fox, R. G., T. L. Wade, E. L. Atlas, M. C. Kennicutt, and J. M. Brooks** (1987) Seasonal variations of selected hydrocarbons, pesticides and PCBs in *Crassostrea virginica* in Galveston Bay, Texas, USA. Abstracts, ACS, 194(-):114. 194th ACS National Meeting, August 30 - September 4, 1987, New Orleans, LA.
- 336 **Franklin A.** (1987) The concentration of metals, organochlorine pesticide and PCB residues in marine fish and shellfish: results from MAFF fish and shellfish monitoring programmes, 1977 - 1984. Aquatic environment monitoring response no. 16, MAFF Directorate of Fisheries Research, Lowestoft, UK, 38 pp.
- 337 **Frazier, J. M.** (1975) The dynamics of metals in the American oyster, *Crassostrea virginica*. I. Seasonal effects. Ches. Sci., 16(-):162-75.
- 338 **Frazier, J. M.** (1976) The dynamics of metals in the American oyster, *Crassostrea virginica*. II. Environmental effects. Ches. Sci., 17(-):188-97.
- 339 **Frazier, J. M., and S. G. George** (1983) Cadmium kinetics in oysters - a comparative study of *Crassostrea gigas* and *Ostrea edulis*. Mar. Biol., 76(-): 55-61.
- 340 **Freeman, H. C., D. A. Horne, B. McTague, and M. McMenemy** (1974) Mercury in some Canadian Atlantic coast fish and shellfish. J. Fish. Res. Bd. Can., 31(-):369-72.

- 341 Frew, R. D., K. A. Hunter, and R. Beyer (1989) Cadmium in the dredge oyster *Ostrea lutaria* - dependence on age, body weight and distribution in internal organs. Mar. Pollut. Bull., 20(9):463-4.
- 342 Fujiya, M. (1960) Effects of copper dissolved in sea water on the oyster. Nippon Suisan Gakkaishi, 26(-):462-7.
- 343 Fukai, R., and D. Broquet (1965) Distribution of chromium in marine organisms. Bull. Inst. Oceanogr. Monaco, 65(1336):1-19.
- 344 Gabbott, P. A., and B. L. Bayne (1973) Biochemical effects of temperature and nutritive stress on *Mytilus edulis* L. J. Mar. Biol. Assoc. U. K., 53(2): 269-86.
- 345 Galindo Bect, M. S., and B. P. Flores Báez (1991) DDT in *Mytilus edulis*: spatio-temporal variations in the Punta Banda estuary, Baja California, Mexico. Bull. Environ. Contam. Toxicol., 46(2):179-84.
- 346 Galloway W. B., V. T. Bowen, E. D. Goldberg, J. L. Laseter, and J. H. Martin (1983) The Mussel Watch: intercomparison of trace level constituent determinations. EPA600J82157, US Environmental Protection Agency, Narragansett, RI, 18 pp.
- 347 Galloway, W. B., J. L. Lake, D. K. Phelps, P. F. Rogerson, V. T. Bowen, J. W. Farrington, E. D. Goldberg, J. L. Laseter, G. C. Lawler, J. H. Martin, and R. W. Risebrough (1983) The Mussel Watch: intercomparison of trace level constituent determinations. Environ. Toxicol. Chem., 2(4):395-410.
- 348 Galstoff, P. S. (1934) The biochemistry of the invertebrates of the sea. Ecol. Monographs, 4(-):481-90 (Chem. Abs., 28:7274, 1934).
- 349 Galstoff P. S., H. F. Prytherch, R. O. Smith, and V. Koehring (1935) Effects of crude oil pollution on oysters in Louisiana waters. Inv. Rep. 18, U. S. Dept. of Commerce, Bureau of Fisheries, 143 pp.
- 350 Galtsoff, P. S. >. (1953) Accumulation of manganese, iron, copper, and zinc in the body of American oyster, *Crassostrea (Ostrea) virginica*. Anat. Rec., 117(-):601-2.
- 351 Garreis, M. J., and F. A. Pittman (1983) Heavy metal, polychlorinated biphenyl, and pesticide levels in *Crassostrea virginica* (Gmelin) from Chesapeake Bay. J. Shellfish. Res., 3(1):90.
- 352 Gault, N. F. S., E. L. C. Tolland, and J. G. Parker (1983) Spatial and temporal trends in heavy metal concentrations in mussels from Northern Ireland coastal waters. Mar. Biol., 77(3):307-16.

- 353 **Gavrilas, M., and F. J. Munno** (1984) Elemental composition of Chesapeake Bay oyster *Crassostrea virginica* in the vicinity of Calvert Cliffs nuclear power plant. In: Proc., 5th Int. Conf. Nucl. Methods Environ. Energy Res. NTIS, Springfield, VA. 348-56.
- 354 **Gendron, F.** (1985) Effects of different compounds in organotin based anti-fouling paints on the oyster *Crassostrea gigas*. Mar. Environ. Res., 17(2-4): 201-2.
- 355 **George, S. G., and T. L. Coombs** (1977) The effects of chelating agents on the uptake and accumulation of cadmium by *Mytilus edulis*. Mar. Biol., 39(4):261-8.
- 356 **George, S. G., and J. M. Frazier** (1982) Some aspects of the relationship between tolerance to heavy metal pollution and metabolism of Cd, Cu and Zn in oysters. Thalassia Jugosl., 18(-):203-19.
- 357 **George, S. G., B. J. S. Pirie, A. R. Cheyne, T. L. Coombs, and P. T. Grant** (1978) Detoxification of metals by marine bivalves: an ultra-structural study of the compartmentation of copper and zinc in oyster *Ostrea edulis*. Mar. Biol., 45(2):147-56.
- 358 **George, S. G., and B. J. S. Pirie** (1980) Metabolism of zinc in the mussel, *Mytilus edulis* : a combined ultrastructural and biochemical study. J. Mar. Biol. Assoc. U. K., 60(3):575-90.
- 359 **Geyer, H., D. Freitag, and F. Korte** (1984) Polychlorinated biphenyls (PCBs) in the marine environment, particularly in the Mediterranean. Ecotox. Environ. Saf., 8(2):129-151.
- 360 **Geyer, H., P. Sheehan, D. Kotzias, D. Freitag, and F. Korte** (1982) Prediction of ecotoxicological behavior of chemicals: relationship between physicochemical properties and bioaccumulation of organic chemicals in the mussel *Mytilus edulis*. Chemosphere, 11(11):1121-34.
- 361 **Gibson, M. J., W. C. Grogan, and J. A. McDougall** (1985) Biological monitoring of trace metals using local populations of marine bivalve molluscs. In: Heavy Metals in the Environment (International Conf.). Vol. I. Athens, Greece, September, 1985. CEP Consultants Ltd., Edinburgh, UK. 712-4.
- 362 **Gil, M. N., M. A. Harvey, and J. L. Esteves** (1988) Metal content in bivalve molluscs from the San José and Nuevo Gulfs, Patagonia, Argentina. Mar. Pollut. Bull., 19(4):181-2.
- 363 **Gilewicz, M., J. R. Guillaume, D. Carles, M. Leveau, and J. C. Bertrand** (1984) Effects of petroleum hydrocarbons on the cytochrome P 450 content of the mollusc bivalve *Mytilus galloprovincialis*. Mar. Biol., 80(2):155-9.

- 364 Gilfillan, E. S. (1975) Decrease of net carbon flux in two species of mussels caused by extracts of crude oil. Mar. Biol., 29(-):53-7.
- 365 Giordano, R., P. Arata, L. Ciaralli, S. Rinaldi, M. Giani, A. M. Cicero, and S. Costantini (1991) Heavy metals in mussels and fish from Italian coastal waters. Mar. Pollut. Bull., 22(1):10-14.
- 366 Giordano, R., P. Arata, S. Rinaldi, L. Ciaralli, M. Giani, M. Rubbiani, and S. Costantini (1989) Mercury, cadmium and lead levels in marine organisms (*Mytilus galloprovincialis* Lmk.) collected along the Italian coasts. Ann. Ist. Super. Sanita., 25(3):511-6.
- 367 Giral, J., and M. T. Castillo (1953) Determination of copper in Mexican foods. Mem. Congr. Cient. Mex., IV Centenario Univ. Mexico, 2(-):232-4.
- 368 Glickstein, N. (1978) Acute toxicity of mercury and selenium to *Crassostrea gigas* embryos and *Cancer magister* larvae. Mar. Biol., 49(2):113-7.
- 369 Goldberg, E. D. (1975) The mussel watch. A first step in global marine monitoring. Mar. Pollut. Bull., 6(-):111.
- 370 Goldberg, E. D. (1980) The surveillance of coastal marine waters with bivalves - the mussel watch. Pergamon Ser. Environ. Sci., 3(Anal. Tech. Environ. Chem.):373-86.
- 371 Goldberg, E. D., V. T. Bowen, J. W. Farrington, G. Harvey, J. H. Martin, P. L. Parker, R. W. Risebrough, W. Robertson, E. Schneider, and E. Gamble (1978) The Mussel Watch. Environ. Conserv., 5(2):101-25.
- 372 Goldberg, E. D., M. Koide, V. Hodge, A. R. Flegal, and J. Martin (1983) U.S. Mussel Watch: 1977-78 results on trace metals and radionuclides. Est. Coastal Shelf Sci., 16(-):69-93.
- 373 Gordon, M., G. A. Knauer, and J. H. Martin (1980) *Mytilus californianus* as a bioindicator of trace metal pollution: variability and statistical considerations. Mar. Pollut. Bull., 11(7):195-198.
- 374 Gorgy, S., N. W. Rakestraw, and D. L. Fox (1948) Arsenic in the sea. J. Mar. Res., 7(-):22-32.
- 375 Gould, D. J., M. F. Dyer, and D. J. Tester (1987) Environmental quality and ecology of the Great Ouse Estuary. Water Pollut. Control, 86(1):84-103.

- 376 **Grace, A. L., and L. F. Gainey** (1987) The effects of copper on the heart rate and filtration rate of *Mytilus edulis*. Mar. Pollut. Bull., 18(-):87-91.
- 377 **Graham, D. L.** (1971) Trace metal levels in intertidal mollusks of California. Veliger, 14(-):365-72.
- 378 **Granby, K.** (1987) Levels of hydrocarbons and chlorinated compounds in the Danish sea areas 1985-1986. Rep. Mar. Pollut. Lab., -(12):1-22.
- 379 **Granby K.** (1987) Levels of hydrocarbons and chlorinated compounds in the Danish Sea areas, 1985-1986. Rep., Marine Pollution Lab. no. 12, Marine Pollution Laboratory, Charlottenlund, Denmark, 23 pp.
- 380 **Green, D. R., J. K. Stull, and T. C. Heesen** (1986) Determination of chlorinated hydrocarbons in coastal waters using a moored *in situ* sampler and transplanted live mussels. Mar. Pollut. Bull., 17(7):324-9.
- 381 **Greffard, J., and J. Meury** (1967) Note sur le pollution en rade de Toulon par les hydrocarbures cancerigenes. Cah. Oceanogr., 19(-):457-68 (French).
- 382 **Greig, R. A., B. A. Nelson, and D. A. Nelson** (1975) Trace metal content in the American oyster. Mar. Pollut. Bull., 6(5):72-3.
- 383 **Greig, R. A., and G. Sennefelder** (1985) Metals and polychlorinated biphenyl concentrations in mussels *Mytilus edulis* from Long Island Sound. Bull. Environ. Contam. Toxicol., 35(3):331-4.
- 384 **Griffith, R. J.** (1980) Natural food availability and assimilation in the bivalve *Choromytilus meridionalis*. Mar. Ecol., 3(2):151-6.
- 385 **Grimanis, A. P., C. Papadopoulos, D. Zafiropoulos, M. Vassilaki, and N. Tsimenidis** (1978) Pollution monitoring of eleven trace elements in three marine organisms from Saronikos Gulf, Greece. Ives Journees Etud. Pollutions, -():233-4.
- 386 **Grimanis, A. P., D. Zafiropoulos, C. Papadopoulos, T. Economou, and M. Vassilaki-Grimani** (1983) Trace metals in *Mytilus galloprovincialis* from three gulfs of Greece. Journ. Etud. Pollut. Mar. Mediterr., 6(-):319-22.
- 387 **Grovhoug J. G., P. F. Seligman, R. L. Fransham, Y. Cola, and M. O. Stallard** (1989) NOSC/TR-1293, Tech. Rep., US Nav. Ocean Syst. Ctr., 104 pp.
- 388 **Gutenmann, W. H., C. A. Bache, J. B. McCahan, and D. J. Lisk** (1988) Heavy metals and chlorinated hydrocarbons in marine fish products. Nutr. Rep. Int., 38(6):1157-61.

- 389 **Guthrie, B. E.** (1975) Chromium, manganese, copper, zinc and cadmium content of New Zealand foods. N. Z. Med. J., 82(-):418-24.
- 390 **Gutiérrez Galindo, E. A.** (1980) Distribution et variation des taux du DDT dans les moules *Mytilus californianus* sur la côte nord-occidentale de Basse Californie. Rev. Int. Océanogr. Méd., LVIII(-):59-67 (French).
- 391 **Gutiérrez Galindo, E. A.** (1981) Effet de l'EDTA sur l'accumulation et l'élimination du mercure par la moule *Mytilus edulis*. Chemosphere, 10(8):971-6 (French).
- 392 **Gutiérrez Galindo, E. A.** (1980) Étude de l'élimination du cadmium par *Mytilus edulis* en présence d'EDTA et de phosphate. Chemosphere, 9(-):495-500 (French).
- 393 **Gutiérrez Galindo, E. A., and R. Cajal Medrano** (1981) PCB in mussels *Mytilus californianus* from the northern Baja California coast. Cienc. Mar., 7(1):77-84.
- 394 **Gutiérrez Galindo, E. A., G. Flores Muñoz, G. Olguín Espinoza, and J. Villaescusa Celaya** (1990) Biodisponibilidad de metales traza en almejas y mejillon del valle agrícola de Mexicali y Alto Golfo de California (Bioavailability of trace metals in clams and mussels of the agricultural valley of Mexicali and upper Gulf of California). Cienc. Mar., 16(4):1-28 (Spanish).
- 395 **Gutiérrez Galindo, E. A., G. Flores Muñoz, and J. A. López Mendoza** (1984) DDT en el ostion *Crassostrea gigas* (Thunberg) cultivado en Bahía San Quintín, Baja California [DDT in cultured oyster *Crassostrea gigas* (Thunberg) in San Quintín Bay, Baja California]. Cienc. Mar., 10(3):17-30 (Spanish).
- 396 **Gutiérrez Galindo, E. A., and G. Flores Muñoz** (1986) Disponibilidad biológica de mercurio en las aguas de la costa norte de Baja California (Biological availability of mercury in coastal seawaters of northern Baja California). Cienc. Mar., 12(2):85-98 (Spanish).
- 397 **Gutiérrez Galindo, E. A., G. Flores Muñoz, and J. Villaescusa Celaya** (1988) Hidrocarburos clorados en moluscos del Valle de Mexicali y Alto Golfo de California (Chlorinated hydrocarbons in molluscs of the Mexicali Valley and Upper Gulf of California). Cienc. Mar., 14(3):91-113 (Spanish).
- 398 **Gutiérrez Galindo, E. A., B. P. Flores Báez, and S. A. Sañudo Wilhelmy** (1983) Variación espacial y temporal de bifenilos policlorados (Aroclor 1254) en el mejillón *Mytilus californianus* (Conrad) de Baja California. Parte II. Cienc. Mar., 9(1):19-25 (Spanish).

- 399 **Gutiérrez Galindo, E. A., S. A. Sañudo Wilhelmy, and B. P. Flores Báez** (1983) Variación espacial y temporal de pesticidas organoclorados en el mejillón *Mytilus californianus* (Conrad) de Baja California. Parte I. Cienc. Mar., 9(1):7-18 (Spanish).
- 400 **Hackney, C. R., S. L. Biede, P. Arbour, L. Reily, M. Kilgen, and M. Cole** (1987) Variation in the levels of sodium and other minerals of nutritional importance in Louisiana oysters (*Crassostrea virginica*). J. Food Sci., 52(4):1099-100.
- 401 **Hagel, P.** (1986) Monitoring of pollutants in Dutch fishery products. Environ. Monit. Assess., 7(3):257-62.
- 402 **Hall, L. W.** (1988) Tributyltin environmental studies in Chesapeake Bay. Mar. Pollut. Bull., 19(9):431-8.
- 403 **Hamilton, E. I.** (1983) Mussel watching. Mar. Pollut. Bull., 14(11):401.
- 404 **Hammerstrom, R. J., V. L. Casper, E. A. Robertson, J. C. Bugg, and J. L. Gaines** (1969) Studies of pesticides in shellfish and estuarine areas of Louisiana and Alabama. Proc. Gulf and South Atlantic States Shellfish Sanitation Research Conf. Mobile, AL, March 21 - 22, 1967. US HEW, Cincinnati, OH. 85-112.
- 405 **Hammerstrom R. J., R. T. Russell, R. M. Tyo, E. A. Robertson, J. L. Gaines, and J. C. Bugg** (1967) Study of pesticides in shellfish and estuarine areas of Louisiana. Water Supply and Sea Res. Prog., US HEW, Cincinnati, OH, 26 pp.
- 406 **Han, B. - C., and T. - C. Hung** (1990) Green oysters caused by copper pollution on the Taiwan coast. Environ. Pollut., 65(-):347-62.
- 407 **Han, B. - C., and T. - C. Hung** (1989) Kinetics of heavy metal accumulation in oysters from the Charting mariculture area of Taiwan. Huan Ching Pao Hu, 12(2):92-117 (Chinese).
- 408 **Han, J. S., and J. H. Weber** (1988) Speciation of methyltin and butyltin compounds and inorganic tin in oysters by hydride generation atomic absorption spectrometry. Anal. Chem., 60(4):316-9.
- 409 **Hannah, D. J., T. L. Page, L. Pickston, and J. A. Taucher** (1989) Analysis of tributyltin compounds in shellfish by using gas chromatography-mass spectrometry. Bull. Environ. Contam. Toxicol., 43(1):22-7.
- 410 **Hansen, N., V. B. Jensen, H. Appelquist, and E. Mørch** (1978) The uptake and release of petroleum hydrocarbons by the marine mussel *Mytilus edulis*. Prog. Water Technol., 10(5-6):351-9.

- 411 Hanus, J. P., H. Guerrero, E. R. Biehl, and C. T. Kenner (1979) High pressure liquid chromatographic determination of polynuclear aromatic hydrocarbons in oysters. J. Assoc. Off. Anal. Chem., 62(1):29-35.
- 412 Harbo R. M., I. K. Birtwell, and O. E. Langer (1983) Trace metals in marine organisms from coastal waters of southern British Columbia, 1971 to 1976. Can. Manuscr. Rep. Fish. Aquat. Sci. no. 1691, Department of Fisheries and Oceans, Vancouver, British Columbia, 42 pp.
- 413 Harris, J. E., G. J. Fabris, P. J. Statham, and F. Tawfik (1979) Biogeochemistry of selected heavy metals in Western Port, Victoria, Australia, and use of invertebrates as indicators with emphasis on *Mytilus edulis planulatus*. Aust. J. Mar. Freshwater Res., 30(2):159-178.
- 414 Harrison, F. L. (1979) Effect of the physicochemical form of trace metals on their accumulation by bivalve mulluscs, USA. In: Chem. Model. Aqueous Syst. ACS Symp. Ser., 93, American Chemical Society, Washington, DC, 611-34.
- 415 Harvey, E. J., R. Herrington, and Z. Kabir (1981) Concentrations of seven trace metals in the waters, sediments, oysters *Crassostrea virginica* and clams *Rangia cuneata* of the Graveline Lake and bayou system of Ocean Springs, Mississippi. J. Miss. Acad. Sci., 26(Suppl.):119.
- 416 Harvey, E. J., R. Herrington, and Z. Kabir (1982) Concentrations of five trace metals in the oysters *Crassostrea virginica* and clams *Rangia cuneata* of the Graveline Lake and bayou system of Ocean Springs, Mississippi. J. Miss. Acad. Sci., 27(-):68.
- 417 Harvey, E. J., and L. A. Knight (1978) Concentrations of three toxic metals in oysters *Crassostrea virginica* of Biloxi and Pascagoula, Mississippi estuaries. Water, Air, Soil Pollut., 9(-):255-61.
- 418 Hatch, W., D. Allen, P. D. Brady, A. C. Davis, and J. W. Farrington (1978) Polychlorinated biphenyls in clams and oysters from New Bedford harbor. Pest. Monit. J., 15(3):123-7.
- 419 Hawker, D. W., and D. W. Connell (1986) Bioconcentration of lipophilic compounds by some aquatic organisms. Ecotox. Environ. Saf., 11(2):184-97.
- 420 Hayashi, A. (1959) Biochemical studies on *Ostrea gigas*. IX. Lead content. Seikagaku, 32(-):871-3.
- 421 Hayashi, A. (1961) Biochemical studies on trace elements in *Ostrea gigas*. I. Seasonal variation in meat. J. Sci. Hiroshima Univ., Ser. A-II, 25(2):337-45.

- 422 **Hayashi, A.** (1961) Biochemical studies on trace elements in *Ostrea gigas*. II. Distribution in different parts of meat. J. Sci. Hiroshima Univ., Ser. A-II, 25(2):347-50.
- 423 **Hayashi, A.** (1962) Biochemical studies on *Ostrea gigas*. X. On the seasonal variations of the distribution of copper and zinc in various organs. Seikagaku, 34(-):88-91.
- 424 **Hayes S. P., P. T. Phillips, M. Martin, M. Stephenson, D. Smith, and J. Linfield** (1985) California state mussel watch: marine water quality monitoring program, 1983 - 1984. Water Quality Monitoring Rep. 85-2WQ, California State Water Resources Control Board, Sacramento, CA.
- 425 **Hayes S. P., and P. T. Phillips** (1986) California state mussel watch: marine water quality monitoring program, 1984 - 1985. Water Quality Monitoring Rep. 86-3WQ, California State Water Resources Control Board, Sacramento, CA.
- 426 **Heidmann, W. A., and M. Beyerbach** (1989) Characterization of PCB mixtures found in biological samples by three parameters derived from the fractions of 45 congeners. Chemosphere, 18(11-12):2303-10.
- 427 **Heinonen, P., J. Paasivirta, and S. Herve** (1986) Periphyton and mussels in monitoring chlorohydrocarbons and chlorophenols in watercourses. Toxicol. Environ. Chem., 11(3):191-201.
- 428 **Henderson R. S.** (1985) (1985) Effects of tributyltin antifouling paint leachates on Pearl Harbor organisms. Site specific flowthrough bioassay tests. NTIS AD-A172 985/4/GAR, Tech. Rep., US Nav. Ocean Syst. Ctr., San Diego, CA.
- 429 **Henderson R. S.** (1985) Effects of tributyltin antifouling paint leachates on Pearl Harbor organisms. Site-specific flowthrough bioassay tests. Final report. 1983 - 1985. NOSCTR1079, US Naval Ocean Systems Center, San Diego, CA, 31 pp.
- 430 **Henderson, R. S.** (1986) Effects of organotin antifouling paint leachates on Pearl Harbor organisms: A site specific flow-through bioassay. In: Organotin Symposium (at) Oceans '86. Washington, D.C., September 23-5, 1986. IEEE Publishing Serv., New York, NY. 1226-33.
- 431 **Henelraad J., A. C. Smaal, and H. Hummel** (1989) Scope for growth in mussels exposed in western and eastern Scheldt. REPT19898, Delta Inst. for Hydrobiological Res., Yerseke, Netherlands, 40 pp.
- 432 **Herdman W. A., and R. W. Boyce** (1900) Oysters and disease. An account of certain observations upon the normal and pathological histology and bacteriology of the oyster and other shellfish. Memoire no. 1 (L. M. B. C. Mem., no. 2, Suppl.), Lancashire Sea-Fisheries, Lancashire, UK, 60 pp.

- 433 Herranz Santos, M. J., and M. Ruiz Amil (1985) Pyruvate kinase of mussel (*Mytilus edulis* L.) foot. Influence of organochlorine insecticides. Comp. Biochem. Physiol., C81(-):375-77.
- 434 Herve, S., P. Heinonen, R. Pauku, M. Knuutila, J. Koistinen, and J. Paasivirta (1988) Mussel incubation method for monitoring organochlorine pollutants in watercourses. Four-year application in Finland. Chemosphere, 17(10):1945-62.
- 435 Hietanen, B., I. Sunila, and R. Kristoffersson (1988) Toxic effects of zinc on the common mussel *Mytilus edulis* L. (Bivalvia) in brackish water. 1. Physiological and histopathological studies. Ann. Zool. Fennici, 25(4):341-7.
- 436 Hiltner, R. S., and H. J. Wichmann (1919) Zinc in oysters. J. Biol. Chem., 38(-):205-221.
- 437 Hiraoka, Y. (1991) Reduction of heavy metal content in Hiroshima Bay oysters (*Crassostrea gigas*) by purification. Environ. Pollut., 70(3):209-17.
- 438 His E., and R. Robert (1980) Action d'un sel organo-métallique, l'acetate de tributyl-étain, sur les oeufs et les larves de *Crassostrea gigas* (Thurnberg). ICES-CM-1980/F:27, International Council for the Exploration of the Sea, Copenhagen, Denmark, 10 pp (French).
- 439 His, E., and R. Robert (1987) Comparative effects of two antifouling paints on the oyster *Crassostrea gigas*. Mar. Biol., 95(1):83-6.
- 440 Hobden, D. J. (1967) Iron metabolism in *Mytilus edulis*. I. Variation in total content and distribution. J. Mar. Biol. Assoc. U. K., 47(-):597-606.
- 441 Hodges, M. A., and W. H. Peterson (1931) Manganese, copper and iron content of serving portions of common foods. J. Am. Dietetic Assoc., 7(-): 6-16 (Chem. Abs., 25:4940, 1931).
- 442 Holden, A. V. (1970) International cooperative study of organochlorine pesticide residues in terrestrial and aquatic wildlife, 1967/1968. Pest. Monit. J., 4(-):117-135.
- 443 Holden, A. V. (1970) International cooperative study of organochlorine and mercury residues in wildlife, 1969-71. Pest. Monit. J., 7(-):37-52.
- 444 Holden, A. V. (1973) Mercury in fish and shellfish. A review. J. Food Technol., 8(-):1-25.

- 445 Holden, A. V., and G. Topping (1972) Occurrence of specific pollutants in fish in the Forth and Tay estuaries. Proc. Royal Soc. Edinburgh, B71(1971/72):189-94.
- 446 Howell, R., A. M. Grant, and N. E. J. MacCoy (1984) Effect of treatment with reserpine on the change in filtration rate of *Mytilus edulis* subjected to dissolved copper. Mar. Pollut. Bull., 15(12):436-9.
- 447 Hrs-Brenko, M., S. Claus, and S. Bubic (1977) Synergistic effects of lead, salinity, and temperature on embryonic development of the mussel *Mytilus galloprovincialis*. Mar. Biol., 44(-):109-15.
- 448 Hsu, S. -, G. - Wang, and S. - Jeng (1979) The occurrence and seasonal variations of sodium potassium calcium magnesium and heavy metals in Taiwans oysters and clams. Bull. Inst. Zool. Acad. Sin. (Taipei), 18(1):11-20.
- 449 Hubbell, R. H., and L. B. Mendel (1927) Zinc and normal nutrition. J. Biol. Chem., 75(-):567-86 (Chem. Abs., 22:800, 1927).
- 450 Huggett, R. J., M. W. Bender, and H. D. Stone (1973) Utilizing metal concentrations relationships in the eastern oyster (*Crassostrea virginica*) to detect heavy metal pollution. Wat. Res., 7(-):451-60.
- 451 Huljev, D., and P. Strohál (1983) Investigation of some trace elements in the Bay of Lim. Mar. Biol., 73(3):239-42.
- 452 Hummel, H., R. H. Bogaards, J. Nieuwenguize, L. De Wolf, and J. M. Van Liere (1990) Spatial and seasonal differences in the PCB content of the mussel *Mytilus edulis*. Sci. Total Environ., 92(-):155-63.
- 453 Hummel, H., J. P. UitOudeGroeneveld, J. Nieuwenhuize, J. M. Van Liere, R. H. Bogaards, and L. De Wolf (1989) Relationship between PCB concentrations and reproduction in mussels *Mytilus edulis*. Mar. Environ. Res., 28(1-4):489-94.
- 454 Hung, T. - C., B. - C. Han, and C. - Y. Horng (1989) A case study of green oysters dissolved organic matter in the Taiwan coastal water. A. Oceanogr. Taiwan, 24(-):76-95.
- 455 Hung, T. C., C. Y. Kuo, and M. H. Chen (1981) Mussel watch in Taiwan, Republic of China. (1). Bioaccumulative factors of heavy metals. A. Oceanogr. Taiwan, 12(-):67-83.
- 456 Hung, T. C., C. Y. Kuo, and M. H. Chen (1983) Mussel watch in Taiwan, Republic of China. 2. Seasonal bioaccumulative factors of heavy metals. Bull. Inst. Chem., Acad. Sin., 30(-):49-62.

- 457 Hungerford, J. M., K. D. Walker, J. D. Torkelson, K. Steinbrecher, and M. M. Wekell (1990) Determination of tri-n-butyltin in oysters by reaction gas chromatography of hydride derivatives. Talanta, 37(10):975-80.
- 458 Hungspreugs, M., S. Silpipat, C. Tonapong, R. F. Lee, H. L. Windom, and K. R. Tenore (1984) Heavy metals and polycyclic hydrocarbon compounds in benthic organisms of the Upper Gulf of Thailand. Mar. Pollut. Bull., 15(6):213-8.
- 459 Hungspreugs, M., and W. Utoomprurkporn (1990) Mussel-Watch type programme in Thailand. In: Proc., First ASEAMS Symp. on Southeast Asian Marine Science and Environmental Protection. UNEP Regional Seas Reports and Studies, 37-43.
- 460 Hungspreugs, M., W. Utoomprurkporn, S. Dharmvanij, and P. Sompongchaiyakul (1989) The present status of the aquatic environment of Thailand. Mar. Pollut. Bull., 20(7):327-32.
- 461 Hungspreugs, M., and C. Yuangthong (1984) Present levels of heavy metals in some molluscs of the Upper Gulf of Thailand. Water, Air, Soil Pollut., 22(4):395-402.
- 462 Hunter, L., H. E. Guard, and L. H. Di Salvo (May 1974) Determination of hydrocarbons in marine organisms and sediments by thin layer chromatography. In: Proc., Symp. Marine Pollution Monitoring (Petroleum). Gaithersburg, MD, May, 1974. Spec. Pub. 409, National Bureau of Standards, Gaithersburg, MD. 213-6.
- 463 Huschenbeth, E., and U. Harms (1975) On the accumulation of organochlorine pesticides, PCB and certain heavy metals in fish and shellfish from Thai coastal and inland waters. Arch. Fisch. Wiss., 2(3):109-22.
- 464 Hussain, M. (1976) Cadmium in Port Phillip Bay mussels. Mar. Pollut. Bull., 7(5):84-6.
- 465 Hussain, M., and E. L. Bleiler (1973) Mercury in Australian oysters. Mar. Pollut. Bull., 4(3):44.
- 466 Hutagalung, H. P. (1989) Mercury and cadmium content in green Mussel, *Mytilus viridis* L. from Onrust Waters, Jakarta Bay. Bull. Environ. Contam. Toxicol., 42(6):814-20.
- 467 Hutagalung, H. P., and S. Syamsu (1987) Heavy metal content in some seafoods collected from Muara Angke fish auction place Jakarta, Indonesia. Mar. Res. Indonesia, -(26):51-8.

- 468 **Hutcheson, M. S., S. D. MacKnight, and W. R. Parker (1981)** Cadmium in eastern Canadian estuaries: Observations on bioavailability and biogeochemistry in cadmium enriched situations. Estuaries, 4(3):259-60.
- 469 **Hwang, G. C., S. J. Kim, K. C. Song, C. H. Wi, and J. H. Park (1986)** Heavy metal concentration in oyster, *Crassostrea gigas* and blue mussel, *Mytilus edulis* in Hansan-Koje Bay. Bull. Fish. Res. Dev. Agency, 37(-):201-9.
- 470 **Ikuta, K. (1987)** A comparison between arsenic contents in littoral sessile forms of mollusks from two sea areas in eastern Kyushu Japan. Bull. Jap. Soc. Sci. Fish., 53(10):1883-6.
- 471 **Ikuta, K. (1967)** Studies on accumulation of heavy metals in aquatic organisms - I. On the copper content of oysters. Bull. Jap. Soc. Sci. Fish., 33(-):405-9.
- 472 **Ikuta, K. (1968)** Studies on accumulation of heavy metals in aquatic organisms. III. On accumulation of copper and zinc in the parts of oysters. Bull. Jap. Soc. Sci. Fish., 34(-):117-22.
- 473 **Ikuta, K. (1968)** Studies on accumulation of heavy metals in aquatic organisms - IV. On disappearance of abnormally accumulated copper and zinc in oysters. Bull. Jap. Soc. Sci. Fish., 34(-):482-7.
- 474 **Ikuta, K. (1968)** Studies on accumulation of heavy metals in aquatic organisms - II. On accumulation of copper and zinc in oysters. Bull. Jap. Soc. Sci. Fish., 34(-):112-6.
- 475 **Ikuta, K., A. Morikawa, and K. Sakoda (1990)** Adequate sample sizes to means of copper and zinc concentrations in a population of *Crassostrea gigas*. Kenkyu Hokoku-Miyazaki Daigaku, 37(1):7-14.
- 476 **Ikuta, K. (1988)** Inherent differences in some heavy metal contents among Ostreids, Mytilids and Acmaeids. Nippon Suisan Gakkaishi, 54(5):811-16.
- 477 **Ikuta, K., and A. Morikawa (1988)** Distribution of heavy metals in soft bodies and shell cavity fluids of *Crassostrea gigas*. Nippon Suisan Gakkaishi, 54(10):1811-6.
- 478 **Ikuta, K., and K. Tokudome (1988)** Localization patterns of some heavy metals in whole soft bodies and byssuses of pearl oysters, *Pinctada fucata martensii*, from two sea areas. Kenkyu Hokoku - Miyazaki Daigaku Nogakubu, 35(2):47-53.
- 479 **Impellizzeri, G., C. Tringali, R. Chillemi, and M. Piattelli (1982)** Observations on the levels of DDTs and PCBs in the central Mediterranean. Sci. Total Environ., 25(2):169-80.

- 480 **Iosifidou, H. G., S. D. Kilikidis, and A. P. Kamarianos (1982)** Analysis for polycyclic aromatic hydrocarbons in mussels (*Mytilus galloprovincialis*) from the Thermaikos Gulf, Greece. Bull. Environ. Contam. Toxicol., 28(5):535-41.
- 481 **Ireland, M. P. (1973)** Result of fluvial zinc pollution on the zinc content of littoral and sub-littoral organisms in Cardigan Bay, Wales. Environ. Pollut., 4(-):27-35.
- 482 **Isaacs, J. D. (1973)** Southern California Coastal Water Research Project findings. Marine Pollution and Marine Waste Disposal. Proc., 2nd Intl. Congress, San Remo, Italy, December 17 - 21, 1973. Pergamon Press, New York, New York. 463-71.
- 483 **Ishii, T., S. Hirano, M. Matsuba, and T. Koyanagi (1980)** Determination of trace elements in shellfish. Nippon Suisan Gakkaishi, 46(11):1375-80.
- 484 **Ishii, T., R. Nakamura, M. Ishikawa, and T. Koyanagi (1985)** Determination and distribution of trace elements in marine invertebrates. Nippon Suisan Gakkaishi, 51(4):609-17.
- 485 **Ishizaki, A., M. Fukushima, and M. Sakamoto (1970)** Distribution of Cd in biological materials. 2. Cadmium and zinc contents of foodstuffs. Japan. J. Hyg., 25(-):207-22.
- 486 **Jaillard. D. (1881)** Les huîtres vertes. Ann. Hyg. Publ., Paris, 3(5):275 (French).
- 487 **Jan, J., M. Komar, and M. Milohnoja (1976)** The content of polychlorinated hydrocarbons in fish in Slovenia. Biol. Vestn., 24(2): 109-114.
- 488 **Janssen, H. H., and N. Scholz (1979)** Uptake and cellular distribution of cadmium in *Mytilus edulis*. Mar. Biol., 55(2):133-41.
- 489 **Jeng, S., Y. Huang, and J. Lain (1974)** Effects of heavy metals and pesticides on the mass mortalities of cultured shellfishes along the southwest coast of Taiwan. J. Fish. Soc. Taiwan, 3(-):35-9.
- 490 **Jeng, S. - S., and Y. W. Huang (1973)** Heavy metal contents in Taiwan's cultured fish. Bull. Inst. Zool. Acad. Sinica, 12(-):79-85.
- 491 **Jeng, S. - S., Y. W. Huang, Y. S. Lee, G. - S. Wang, and S. - J. Jeng (1973)** Heavy metal contents of fishes caught in Keelung Harbor. J. Fish. Soc. Taiwan, 2(-):78-81.

- 492 Jenner, H. A., F. Noppert, and T. Sikking (1989) A new system for the detection of valve-movement response of bivalves. Kema Sci. Tech. Rep., 7(2):9.
- 493 Jensen A. (1985) Geographical trends in the concentrations of heavy metals in blue mussels from the German Bight to Hirtshals in 1983. Preliminary report. ICES-CM-1985/E:44, International Council for the Exploration of the Sea, Copenhagen, Denmark, 4 pp.
- 494 Jensen, A. C., and J. Foehrenbach (1971) Testing for mercury in New York's marine fish and shellfish. Conservationist (N. Y.), 26(2):31-3.
- 495 Jensen, K. (1984) Benzo[a]pyrene input and occurrence in a marine area affected by refinery effluent. Water, Air, Soil Pollut., 22(1):57-65.
- 496 Jensen, S., A. G. Johnels, M. Olsson, and G. Otterlind (1969) DDT and PCB in marine animals from Swedish waters. Nature (London), 224(5216):247-50.
- 497 Jorhem, L., P. Mattsson, and S. Storach (1984) Lead, cadmium, zinc and certain other metals in foods on the Swedish market. Vaar Foeda, 36(Suppl. 3):135-208.
- 498 Jouanneau, J. M., B. Boutier, and J. - F. Chiffoleau (1990) Cadmium in the Gironde fluvioestuarine system: behaviour and flow. Sci. Total Environ., 97/98(465-79):
- 499 Julshamn, K. (1981) Studies on major and minor elements in molluscs in Western Norway - VII. The contents of 12 elements, including copper, zinc, cadmium and lead, in common mussel (*Mytilus edulis*) and brown seaweed, (*Ascophyllum nodosum*) relative to the distance from the in. Fisk. Skr., Ser. Ernaer., 1(5):267-87.
- 500 Julshamn, K. (1981) Studies on major and minor elements in molluscs in Western Norway - III. Effects of size and age on the contents of 10 elements in oyster (*Ostrea edulis*), taken from unpolluted waters. Fisk. Skr., Ser. Ernaer., 1(5):199-214.
- 501 Julshamn, K. (1981) Studies on major and minor elements in molluscs in Western Norway - II. Seasonal variations in the contents of 10 elements in oysters (*Ostrea edulis*) from three oyster farms. Fisk. Skr., Ser. Ernaer., 1(5):183-97.
- 502 Julshamn, K. (1981) Studies on major and minor elements in molluscs in Western Norway - I. Geographical variations in the contents of 10 elements in oyster (*Ostrea edulis*), common mussel (*Mytilus edulis*) and brown seaweed (*Ascophyllum nodosum*) from three oyster farms. Fisk. Skr., Ser. Ernaer., 1(5):161-82.

- 503 **Julshamn, K.** (1981) Studies on major and minor elements in molluscs in Western Norway. Fisk. Dr. Skr. Ser. Ernoering, 1(5):267-87.
- 504 **Julshamn, K., and K. J. Andersen** (1983) Subcellular distribution of major and minor elements in unexposed mollusks in Western Norway - II. The distribution and binding of cadmium, zinc, copper, magnesium, manganese and iron in the kidney and the digestive system of the common mussel *Mytilus edulis*. Comp. Biochem. Physiol., 75A(1):13-16.
- 505 **Julshamn, K., and K. Andersen** (1983) Subcellular distribution of major and minor elements in unexposed mollusks in Western Norway - I. The distribution and binding of cadmium, zinc and copper in the liver and the digestive system of the oyster *Ostrea edulis*. Comp. Biochem. Physiol., 75A(1):9-12.
- 506 **Juras, A. A.** (1988) A preliminary survey of heavy metal concentrations in some estuarine organisms in the littoral zone of São Luis Island, Maranhão, Brazil. Metals in Coastal Environments of Latin America, Springer-Verlag, New York, 16-20.
- 507 **Kacprzak, J. L.** (1990) Determination of tributyltin in oysters by electrothermal atomic absorption spectrometry. Int. J. Environ. Anal. Chem., 38(4):561-4.
- 508 **Kagi, R., R. Alexander, and M. Cumbers** (1985) Polycyclic aromatic hydrocarbons in rock oysters: a baseline study. Int. J. Environ. Anal. Chem., 22(1-2):135-53.
- 509 **Kaitala, S.** (1988) Multiple toxicity and accumulation of heavy metals in two bivalve mollusk species. Water Sci. Technol., 20(6-7):23-32.
- 510 **Kannan N., S. Tanabe, R. Tatsukawa, and D. J. H. Phillips** (1989) Persistency of highly toxic coplanar PCBs in aquatic ecosystems: uptake and release kinetics of coplanar PCBs in green-lipped mussels (*Perna viridis* Linnaeus). Environ. Pollut., 56(1):65-76.
- 511 **Kanno, A., N. Kikuchi, and M. Takahashi** (1988) Investigations of pollutants in foods. Content of TBTO (bis[tributyltin]oxide) in fish and shellfish from the market. Iwate-ken Eisei Kenkyusho Nenpo, 31(-):55-9.
- 512 **Karbe L., J. Gonzales Valero, T. Borchardt, M. Dembinski, A. Duch, H. Hablitzel, and R. Zeitner** (1988) Heavy metals in fish and benthic organisms from the northwestern, central and southern North Sea: regional patterns comparing dab, blue mussel and hermit crab (*Limanda limanda*, *Mytilus edulis*, *Pagurus bernhardus*). ICES-CM-1988/E:22, International Council for the Exploration of the Sea, Copenhagen, Denmark, 17 pp.

- 513 Karbe, L., C. H. Schnier, and H. O. Siewers (1977) Trace elements in mussels (*Mytilus edulis*) from coastal areas of the North Sea and the Baltic. Multielement analyses using instrumental neutron activation analysis. J. Rad. Chem., 37(-):927-43.
- 514 Keckes, S., B. Ozretic, and M. Krajnovic (1968) Loss of 65-Zn in the mussel *Mytilus galloprovincialis*. Malacologia, 7(-):1-6.
- 515 Kennedy, P. C. (1986) The use of mollusks for monitoring trace elements in the marine environment in New Zealand 1. The contribution of ingested sediment to the trace element concentrations in New Zealand mollusks. N. Z. J. Mar. Freshwater Res., 20(4):627-40.
- 516 Khadim, M. A. (1990) Methodologies for monitoring the genetic effects of mutagens and carcinogens accumulated in the body tissues of marine mussels. Rev. Aquat. Sci., 2(1):83-107.
- 517 Khristoforova, N. K. (1980) Content of heavy metals in the soft tissues of 3 species of bivalve mollusks in Bagaman Island, Melanesia. Sov. J. Mar. Biol. (Engl. Transl. Biol. Morya), 6(6):342-346.
- 518 Kieley K. M., P. A. Hennigar, R. A. F. Matheson, and W. Ernst (1988) Polynuclear aromatic hydrocarbons and heterocyclic aromatic compounds in Sydney Harbor, Nova Scotia. A 1986 survey. EPS-5-AR-88-7, Environment Canada, Dartmouth, NS, Canada, 41 pp.
- 519 Killikidis, S. D., J. E. Psomas, A. P. Kamarianos, and A. G. Panetsos (1981) Monitoring of DDT, PCBs and other chlorinated hydrocarbons in marine organisms from the North Aegean Sea. Journ. Etud. Pollut. Mar. Mediterr., 301-6.
- 520 King, D. G., and I. M. Davies (1987) Laboratory and field studies of the accumulation of inorganic mercury by the mussel *Mytilus edulis* (L.). Mar. Pollut. Bull., 18(1):40-5.
- 521 King, N., M. Miller, and S. De Mora (1989) Tributyltin levels for seawater, sediment, and selected marine species in coastal Northland and Auckland, New Zealand. N. Z. J. Mar. Freshwater Res., 23(2):287-94.
- 522 Kiørboe, T., F. Mohlenberg, and H. U. Rügsgard (1983) Mercury levels in fish, invertebrates and sediments in a recently recorded polluted area (Nissum Broad, Western Limfjord, Denmark). Mar. Pollut. Bull., 14(1):21-4.
- 523 Kjellstrom, T., J. M. McKenzie, and R. P. Sharma (1983) Exposure to cadmium and other trace elements from Bluff New Zealand oysters. In: 15th Congress. Pacific Science Association. Dunedin, New Zealand, February 1 - 11, 1983. 129.

- 524 **Klaas, E. E., and A. A. Belisle** (1977) Organochlorine pesticide and polychlorinated biphenyl residues in selected fauna from a New Jersey salt marsh - 1967 versus 1973. Pest. Monit. J., 10(-):149-58.
- 525 **Klumpp, D. W., and C. Burdon-Jones** (1982) Investigation of the potential bivalve mollusca as indicators of heavy metal levels in tropical marine waters. Aust. J. Mar. Freshwater Res., 33(2):285-300.
- 526 **Klumpp, D. W., and P. J. Peterson** (1979) Arsenic and other trace elements in the waters and organisms of an estuary in southwest England, UK. Environ. Pollut., 19(1):11-20.
- 527 **Klungsoyr, J., S. Wilhelmsen, K. Westrheim, E. Saetvedt, and K. H. Palmork** (1988) The GEEP workshop: organic chemical analyses. Mar. Ecol., 46(1-3):19-26.
- 528 **Knutzen J.** (1987) Some observations of effects from polycyclic aromatic hydrocarbons (PAH) and fluoride in Norwegian marine recipients of aluminum smelter waste. NIVAE87700II, Norsk Inst. for Vannforskning, Oslo, Norway, 29 pp.
- 529 **Koeman, J. H., M. C. Noever de Brauw, and R. H. Vos** (1969) Chlorinated biphenyls in fish, mussels and birds from the river Rhine and Neatherlands coastal area. Nature, 221(-):1126-8.
- 530 **Koepp, S. J., E. D. Santoro, R. Zimmer, and J. Nadeau** (1987) Bioaccumulation of Hg, Cd, and Pb in *Mytilus edulis* transplanted to a dredged-material dumpsite. In: Biological Processes and Wastes in the Ocean, Oceanic Processes in Marine Pollution, Vol. 1, Capuzzo, J. M., Kester, D. R. (eds.), Robert E. Krieger, Malabar, FL, 97-108.
- 531 **Koepp S., E. D. Santoro, R. Zimmer, and J. E. Nadeau** (1981) Selected metal concentrations in *Mytilus edulis* transplanted in and around a dredged material disposal site in the New York Bight. ICES-CM-1981/E:18, International Council for the Exploration of the Sea, Copenhagen, Denmark, 15 pp.
- 532 **Kohn, C. A.** (1898) Notes on the occurrence of iron and copper in certain oysters. Rep. Brit. Assoc. Transactions, -(-):562.
- 533 **Kohn, C. A.** (1896) The presence of iron and of copper in green and white oysters. Rep. Brit. Assoc. Transactions, Sect I(-):986.
- 534 **Koide, M., D. S. Lee, and E. D. Goldberg** (1982) Metal and transuranic records in mussel shells, byssal threads and tissues. Est. Coastal Shelf Sci., 15(6):679-96.
- 535 **Kondo, M.** (1974) Mercury content of animal and vegetable foods. J. Hyg. Chem., 20(2):47-66.

- 536 Kopfler, F. (1974) The accumulation of organic and inorganic mercury compounds by the Eastern oyster (*Crassostrea virginica*). Bull. Environ. Contam. Toxicol., 11(-):275-80.
- 537 Kopfler, F. C., and J. Mayer (1973) Concentrations of five trace metals in the waters and oysters (*Crassostrea virginica*) in Mobile Bay, Alabama. Proc. Shellfish. Assoc., 63(-):27-34.
- 538 Korea Ocean Research and Development Inst. (1990) A study on the coastal water pollution and monitoring - third year. BSPG 00112-315-4, Korea Ocean Research and Development Inst., Seoul, Korea, 261 pp.
- 539 Koryakova, M. D., and L. G. Zorina (1989) Effect of the chemical nature of the substrate on mineral composition of the mussel *Mytilus trossulus* during overgrowth. Biol. Morya (Vladivostok), -(6):41-5 (Russian).
- 540 Kosta, L., V. Ravnik, A. R. Byrne, J. Stirn, M. Dermelj, and P. Stegnar (1978) Some trace elements in the waters marine organisms and sediments of the Adriatic by neutron activation analysis. J. Rad. Chem., 44(2):317-332.
- 541 Kramer, K. J. M., H. A. Jenner, and D. De Zwart (1989) The valve movement response of mussels: a tool in biological monitoring. Hydrobiol., 188-189(-):433-43.
- 542 Krishnakumar, P. K., R. Damodaran, and P. N. K. Nambisan (1987) Carotenoid content and tolerance of green mussel *Perna viridis* (Linnaeus) to acute mercury and zinc toxicity. Ind. J. Mar. Sci., 16(3):155-7.
- 543 Krull, I. S., K. W. Panaro, J. Noonan, and D. Erickson (1989) The determination of organotins (Organotin) in fish and shellfish via gas chromatography - flame photometric detection and direct current plasma emission spectroscopy (GC-FPD/DCP). Appl. Organomet. Chem., 3(4): 295-308.
- 544 Kumar, I. S., K. Sreenivas, K. R. Reddy, B. J. Reddy, and K. Ramesh (1990) A note on the spectroscopic studies of marine shell *Mytilus*-sp. Curr. Sci. (Bangalore), 59(6):316-317.
- 545 Kumaraguru, A. K., and K. Ramamoorthi (1978) Toxicity of copper to three estuarine bivalves. Mar. Environ. Res., 1(-):43-8.
- 546 Kurelec, B. (1987) Comment on: D. R. Livingstone's critique (Mar. Biol. 94, 319-320, 1987) of the paper "Metabolic fate of aromatic amines in the mussel *Mytilus galloprovincialis*". Mar. Biol., 94(2):321-2.

- 547 **Kurelec, B., A. Garg, S. Krca, and R. C. Gupta** (1990) DNA adducts in marine mussel *Mytilus galloprovincialis* living in polluted and unpolluted environments. In: Biomarkers of Environmental Contamination, McCarthy, J. F., Shugart, L. R. (eds.), Lewis Publishers (CRC Press, Inc.), Boca Raton, FL, 217-27.
- 548 **Kveseth, K., B. Sortland, and T. Bokn** (1982) Polycyclic aromatic hydrocarbons in sewage, mussels and tap water. Chemosphere, 11(7):623-39.
- 549 **La Touche, Y. D., and M. C. Mix** (1982) The effects of depuration, size and sex on trace metal levels in bay mussels. Mar. Pollut. Bull., 13(1): 27-9.
- 550 **La Touche, Y. D., and M. C. Mix** (1982) Seasonal variations of arsenic and other trace elements in bay mussels (*Mytilus edulis*). Bull. Environ. Contam. Toxicol., 29(6):665-70.
- 551 **Ladd J. L., S. P. Hayes, M. Martin, M. D. Stephenson, S. L. Coale, J. Linfield, and M. Brown** (1984) California State mussel watch: 1981 - 1983. Biennial report. Trace metals and synthetic organic compounds in mussels from California's coast, bays, and estuaries. Wat. Qual. Monit. Rep. 83-3TS, California State Water Resources Control Board, Sacramento, CA, 81 pp.
- 552 **Lake J., G. L. Hoffman, and S. C. Schimmel** (1985) Bioaccumulation of contaminants from Black Rock Harbor dredged material by mussels and polychaetes. Final report. WESTRD852, US Army Engineer Waterways Experimental Station, Vicksburg, MS, 157 pp.
- 553 **Lakshamanan, P. T., and P. N. K. Nambisan** (1983) Seasonal variations in trace metal content in bivalve molluscs, *Villorita cyprinoides* var. *cochinensis* (Hanley), *Meretrix casta* (Chemnitz) and *Perna viridis* (Linnaeus). Ind. J. Mar. Sci., 12(-):100-3.
- 554 **Lakshmanan, P. T., and P. N. K. Nambisan** (1989) Bioaccumulation and depuration of some trace metals in the mussel, *Perna viridis* (Linnaeus). Bull. Environ. Contam. Toxicol., 43(1):131-8.
- 555 **Lande, E.** (1977) Heavy metal pollution in Trondheimsfjorden, Norway, and the recorded effects on the fauna and flora. Environ. Pollut., 12(3):187-98.
- 556 **Langston, W. J.** (1980) Arsenic in UK estuarine sediments and its availability to benthic organisms. J. Mar. Biol. Assoc. U. K., 60(4): 869-882.
- 557 **Langston, W. J.** (1984) Availability of arsenic to estuarine and marine organisms: a field and laboratory evaluation. Mar. Biol., 80(2):143-54.

- 558 Langston, W. J. (1985) The use of organisms and sediments as indicators of environmental contamination with special reference to mercury in the Mersey estuary. In: Heavy Metals in the Environment (International Conf.). Vol. I. Athens, Greece, September, 1985. CEP Consultants Ltd., Edinburgh, UK. 374-6.
- 559 Lankester, E. R. (1886) On green oysters. Q. J. Microsc. Sci., 26(-): 71-94.
- 560 Langston, W. J., G. W. Bryan, G. R. Burt, and P. E. Gibbs (1990) Assessing the impact of tin and organotin in estuaries and coastal regions. Funct. Ecol., 4(3):433-4.
- 561 Larson, K. G., B. S. Roberson, and F. M. Hetrick (1989) Effect of environmental pollutants on the chemiluminescence of hemocytes from the American oyster *Crassostrea virginica*. Dis. Aquat. Organisms, 16(2): 131-6.
- 562 Latouche, G., P. Dumas, and Jouanneau (1985) Cadmium in water, sediments and oysters from a macrotidal estuary: the Gironde estuary (S. W. France). In: Heavy Metals in the Environment (International Conf.). Vol. I. Athens, Greece, September, 1985. CEP Consultants Ltd., Edinburgh, UK. 551-3.
- 563 Latouche, Y. D., and M. C. Mix (1982) The effects of depuration, size and sex on trace metal levels in bay mussels. Mar. Pollut. Bull., 13(1): 27-9.
- 564 Lauenstein, G. G. (1988) The NOAA National Status and Trends Mussel Watch Program. J. Shellfish. Res., 7(3):569.
- 565 Lauenstein, G. G., A. Robertson, and T. P. O'Connor (1990) Comparison of trace metal data in mussels and oysters from a Mussel Watch Programme of the 1970s with those from a 1980s programme. Mar. Pollut. Bull., 21(9):440-7.
- 566 Laughlin, R. B., W. French, and H. E. Guard (1986) Accumulation of bis(tributyltin)oxide by the marine mussel *Mytilus edulis*. Environ. Sci. Technol., 20(-):884-90.
- 567 Laughlin, R. B., and O. Lindén (1985) Fate and effects of organotin compounds. Ambio, 14(2):88-94.
- 568 Laughlin, R. B., and W. French (1988) Concentration dependence of bis(tributyl)tin oxide accumulation in the mussel, *Mytilus edulis*. Environ. Toxicol. Chem., 7(12):1021-6.

- 569 **Law, R., and E. Andrulowicz** (1983) Hydrocarbons in water, sediment and mussels from the southern Baltic Sea. Mar. Pollut. Bull., 14(8): 289-93.
- 570 **Lawler, I. F., and J. C. Aldrich** (1987) Sublethal effects of bis(tributyltin)oxide on *Crassostrea gigas* spat. Mar. Pollut. Bull., 18(6): 274-8.
- 571 **Leatherland, T. M., and J. D. Burton** (1974) The occurrence of some trace metals in coastal organisms with particular reference to the Solent region. J. Mar. Biol. Assoc. U. K., 54(-):457-68.
- 572 **Leavitt, D. F., B. A. Lancaster, A. S. Lancaster, and J. McDowell Capuzzo** (1990) Changes in the biochemical composition of a subtropical bivalve, *Arca zebra*, in response to contaminant gradients in Bermuda. J. Exp. Mar. Biol. Ecol., 138(-):85-98.
- 573 **Lee, R. F.** (1985) Metabolism of tributyltin oxide by crabs, oysters and fish. Mar. Environ. Res., 17(2-4):145-8.
- 574 **Lee, R. F.** (1986) Metabolism of bis(tributyltin)oxide by estuarine animals. In: Organotin Symposium (at) Oceans '86. Washington, D.C., September 23-5, 1986. IEEE Publishing Serv., New York, NY. 1182-8.
- 575 **Lee, R. F., B. Dornseif, F. Gonsoulin, K. Tenore, and R. Hanson** (1981) Fate and effects of a heavy fuel oil spill on a Georgia salt marsh. Mar. Environ. Res., 5(2):125-43.
- 576 **Lee, R. F., W. S. Gardner, J. W. Anderson, J. W. Blaylock, and J. Barwell-Clarke** (1978) Fate of polycyclic aromatic hydrocarbons in controlled ecosystem enclosures. Environ. Sci. Technol., 12(7):832-8.
- 577 **Lee, R. F., R. Sauerheber, and A. A. Benson** (1972) Petroleum hydrocarbons. Uptake and discharge by the marine mussel, *Mytilus edulis*. Science, 177(4046):344-6.
- 578 **Lee, S. H., and K. W. Lee** (1984) Heavy metals in mussels in the Korean coastal waters. J. Oceanol. Soc. Korea, 19(2):111-7.
- 579 **Lee, S. H., J. R. Oh, S. H. Kim, and S. R. Cho** (1989) Comparison of sample preparation techniques for atomic absorption determination of heavy metals in mussels. Ocean Res. (Seoul), 11(2):1-4.
- 580 **Lehmann, K. B.** (1895) Hygienische Studien über Kupfer. II. Der Kupfergehalt der menschlichen Nahrungsmittel. Arch. Hyg., Berlin, 24(-):18 (German).

- 581 Lenihan, H. S., J. S. Oliver, and M. A. Stephenson (1990) Changes in hard bottom communities related to boat mooring and tributyltin in San Diego Bay: a natural experiment. Mar. Ecol., 60(1-2):147-59.
- 582 Levine, H., R. E. Remington, and F. B. Culp (1931) The value of the oyster in nutritional anemia. J. Nutr., 4(4):469-81.
- 583 Liebert, F. (1915) Turning green of oysters and their content of heavy metals. Chem. Weekblad, 12(-):978-83 (Chem. Abs., 10:1060, 1916).
- 584 Lindow, C. W., C. A. Elvehjem, and W. H. Peterson (1929) The copper content of plant and animal foods. J. Biol. Chem., 82(-):465-71 (Chem. Abs., 23:3757, 1929).
- 585 Linduska J. P., and E. W. Surber (1948) Effects of DDT and other insecticides on fish and wildlife. Summary of investigations during 1947. Circ. 15, U. S. Dept. of the Interior, Fish and Wildlife Service, 19 pp.
- 586 Livingstone, D. R. (1987) Comment on: "Metabolic fate of aromatic amines in the mussel *Mytilus galloprovincialis*" by B. Kurelec *et al.* (Mar. Biol. 91, 523-527, 1986). Mar. Biol., 94(2):319-20.
- 587 Livingstone, D. R. (1987) Seasonal responses to diesel oil and subsequent recovery of the cytochrome P-450 monooxygenase system in the common mussel, *Mytilus edulis* L., and the periwinkle, *Littorina littorea* L. Sci. Total Environ., 65(-):3-20.
- 588 Livingstone, D. R., and S. V. Farrar (1984) Tissue and subcellular distribution of enzyme activities of mixed-function oxygenase and benzo(a)pyrene metabolism in the common mussel *Mytilus edulis* L. Sci. Total Environ., 39(-):209-35.
- 589 Livingstone, D. R., M. N. Moore, D. W. Lowe, C. Nasci, and S. V. Farrar (1985) Responses of the cytochrome P-450 monooxygenase system to diesel oil in the common mussel, *Mytilus edulis* L., and the periwinkle, *Littorina littorea* L. Aquat. Toxicol., 7(-):79-91.
- 590 Livingstone, D. R., P. Garcia Martinez, J. J. Stegeman, and G. W. Winston (1988) Benzo[a]pyrene metabolism and aspects of oxygen radical generation in the common mussel (*Mytilus edulis* L.). Biochem. Soc. Trans., 16(5):779.
- 591 Lobel, P. B. (1987) Intersite, intrasite and inherent variability of the whole soft tissue zinc concentrations of individual mussels *Mytilus edulis*: importance of the kidney. Mar. Environ. Res., 21(59-71):
- 592 Lobel, P. B. (1986) The role of the kidney in determining the whole soft tissue zinc concentration of individual mussels, *Mytilus edulis*. Mar. Biol., 92(3):355-9:

- 593 Lobel, P. B. (1987) Short-term and long-term uptake of zinc by the mussel, *Mytilus edulis*: a study of individual variability. Arch. Environ. Contam. Toxicol., 16(-):723-32.
- 594 Lobel, P. B., S. P. Belkhode, S. E. Jackson, and H. P. Longerich (1990) Recent taxonomic discoveries concerning the mussel *Mytilus*: implications for biomonitoring. Arch. Environ. Contam. Toxicol., 19(4): 508-12.
- 595 Lobel, P. B., S. P. Belkhode, S. E. Jackson, and H. P. Longerich (1989) A universal method for quantifying and comparing the residual variability of element concentrations in biological tissues using elements in the mussel *Mytilus edulis* as a model. Mar. Biol., 102(4):513-18.
- 596 Lobel, P. B., and H. D. Marshall (1988) A unique low molecular weight zinc-binding ligand in the kidney cytosol of the mussel *Mytilus edulis*, and its relationship to the inherent variability of zinc accumulation in this organism. Mar. Biol., 99(-):101-5.
- 597 Lobel, P. B., P. Mogie, D. A. Wright, and B. L. Wu (1982) Metal accumulation in four molluscs. Mar. Pollut. Bull., 13(-):170-4.
- 598 Lobel, P. B., and J. F. Payne (1984) An evaluation of mercury-203 for assessing the induction of metallothionein-like proteins in mussels exposed to cadmium. Bull. Environ. Contam. Toxicol., 33(-):144-52.
- 599 Lobel, P. B., and D. A. Wright (1983) Frequency distribution of zinc concentrations in the common mussel *Mytilus edulis* (L.). Estuaries, 6(-):154-9.
- 600 Lobel, P. B., and D. A. Wright (1982) Gonadal and nongonadal zinc concentrations in mussels. Mar. Pollut. Bull., 13(9):320-3.
- 601 Lobel, P. B., and D. A. Wright (1982) Relationship between body zinc concentration and allometric growth measurements in the mussel *Mytilus edulis*. Mar. Biol., 66(-):145-50.
- 602 Lobel, P. B., and D. A. Wright (1982) Total body zinc concentration and allometric growth ratios in *Mytilus edulis* collected from different shore levels. Mar. Biol., 66(-):231-6.
- 603 Loehr, L. C., and E. E. Collias (1983) Old cannery wastes a potential source of trace metals in the marine environment. Mar. Pollut. Bull., 14(10):392-394.

- 604 Long, E. R., and M. F. Buchman (1990) A comparative evaluation of selected measures of biological effects of exposure of marine organisms to toxic chemicals. In: Biomarkers of Environmental Contamination, McCarthy, J. F., Shugart, L. R. (eds.), Lewis Publishers (CRC Press, Inc.), Boca Raton, FL, 355-94.
- 605 Long, E. R., M. F. Buchman, S. M. Bay, R. J. Breteler, R. S. Carr, P. M. Chapman, J. E. Hose, A. L. Lissner, J. Scott, and D. A. Wolfe (1990) Comparative evaluation of five toxicity tests with sediments from San Francisco Bay and Tomales Bay, California. Environ. Toxicol. Chem., 9(9): 193-214.
- 606 López Costa, R., and L. Rodríguez Molíns (1957) Colorimetric determination of lead in *Mytilus edulis* and in the sea water of the Vigo estuary. Bol. Inst. Esp. Oceanogr., -(84):1-13.
- 607 Lowe, D. M. (1988) Alterations in cellular structure of *Mytilus edulis* resulting from exposure to environmental contaminants under field and experimental conditions. Mar. Ecol., 46(1-3):91-100.
- 608 Lowe, J. I., P. R. Parrish, J. M. ,. Patrick, and J. Forester (1972) Effects of the polychlorinated biphenyl Aroclor 1254 on the American oyster *Crassostrea virginica*. Mar. Biol., 17(3):209-14.
- 609 Lowe, J. I., P. D. Wilson, A. J. Rick, and A. J. Wilson (1971) Chronic exposure of oysters to DDT, toxaphene and parathion. Proc. Shellfish. Assoc., -(61):71-9.
- 610 Lowe, W. F. (1897) Note on the presence of copper in oysters. Analyst, 22(-):86.
- 611 Lower, W. R., and R. J. Kendall (1990) Sentinel species and sentinel bioassay. In: Biomarkers of Environmental Contamination, McCarthy, J. F., Shugart, L. R. (eds.), Lewis Publishers (CRC Press, Inc.), Boca Raton, FL, 309-31.
- 612 Lulic, S., and P. Strohal (1974) The application of neutron activation analysis in studying the marine pollution processes. Rev. Int. Océanogr. Méd., 33(-):119-23.
- 613 Lunde, G. (1970) Analysis of arsenic and selenium in marine raw materials. J. Sci. Food. Agr., 21(5):242-7.
- 614 Lunde, G. (1973) Separation and analysis of organic-bound and inorganic arsenic in marine organisms. J. Sci. Food. Agr., 24(-):1021-7.

- 615 Luten, J. B., W. Bouquet, M. M. Burggraaf, A. B. Rauchbaar, and J. Rus (1986) Trace metals in mussels (*Mytilus edulis*) from the Waddenzee, coastal North Sea and the estuaries of Ems, Western and Eastern Scheldt. Bull. Environ. Contam. Toxicol., 36(5):770-7.
- 616 Lyngby, J. E., and H. Brix (1987) Monitoring of mercury and cadmium in coastal areas, using aquatic organisms and sediment. Water. Sci. Technol., 19(7):1239-41.
- 617 Lyngby, J. E., and H. Brix (1987) Monitoring of heavy metal contamination in the Limfjord, Denmark, using biological indicators and sediment. Sci. Total Environ., 64(3):239-52.
- 618 Lytle, T. F., and J. S. Lytle (1982) Heavy metals in oysters and clams of Mississippi. Bull. Environ. Contam. Toxicol., 29(1):50-7.
- 619 Lytle, T. F., and J. S. Lytle (1982) Heavy metals in oysters and clams of St. Louis Bay, Mississippi. Bull. Environ. Contam. Toxicol., 36(-):587-94.
- 620 Lytle, T. F., and J. S. Lytle (1990) Heavy metals in the eastern oyster, *Crassostrea virginica*, of the Mississippi Sound. Bull. Environ. Contam. Toxicol., 44(1):142-8.
- 621 MacInnes, J. R., and A. Calabrese (1979) Combined effects of salinity, temperature, and copper on embryos and early larvae of the American oyster, *Crassostrea virginica*. Arch. Environ. Contam. Toxicol., 8(5):553-62.
- 622 Mackay, N. J., R. J. Williams, J. L. Kacprzac, M. N. Kazacos, A. J. Collins, and E. H. Auty (1975) Heavy metals in cultivated oysters (*Crassostrea commercialis* = *Saccostrea cucullata*) from the estuaries of New South Wales. Aust. J. Mar. Freshwater Res., 26(-):31-46.
- 623 Macleod W. D., D. W. Brown, R. G. Jenkins, R. L. Scott, and V. D. Henry (1977) Petroleum hydrocarbons in the northern Puget Sound area. A pilot design study. PB-274591, NOAA, Boulder, Co, 64 pp.
- 624 Maher, W. A. (1986) Trace metal concentrations in marine organisms from St.-Vincent Gulf South Australia. Water. Air. Soil Pollut., 29(1):77-84.
- 625 Majone, F., R. Brunetti, I. Gola, and A. G. Levis (1987) Persistence of micronuclei in the marine mussel, *M. Galloprovincialis*, after treatment with mitomycin C. Mut. Res., 191(-):157-61.
- 626 Majori, L., G. Nedodan, and G. B. Modonutti (1976) Inquinamento da mercurio nell'alto Adriatico. Aqua & Aria, -(3):164-72 (Italian).

- 627 Majori, L., G. Nedoclan, G. B. Modonutti, and F. Davis (1978) Methodological researches on the phenomenon of metal accumulation in the *Mytilus galloprovincialis* and on the possibility of using biological indicators as test organisms of marine metal pollution. Rev. Int. Océanogr. Méd., 49(-):81-7.
- 628 Majori, L., G. Nedoclan, G. B. Modonutti, and F. Daris (1978) Study of the seasonal variations of some trace elements in the tissues of *Mytilus galloprovincialis* taken in the Gulf of Trieste. Rev. Int. Océanogr. Méd., 49(-):37-40.
- 629 Mallet, L. (1961) Recherches des hydrocarbures polybenzéniques du type benzo-3,4-pyrenes dans la faune des milieux marins (Manche, Atlantique et Méditerranée). C. R. Acad. Sci., Paris, 253(-):168-70 (French).
- 630 Mallet, L., L. V. Perdriau, and J. Perdriau (1962) Pollution par les hydrocarbures polybenzéniques du type benzo-3,4-pyrene de la région occidentale de l'océan glacial Arctique. C. R. Acad. Sci., Paris, 256(-):3487-9 (French).
- 631 Manga, N. (1980) Trace metals in the common mussel *Mytilus edulis* from Belfast Lough. Ir. Nat. J., 20(4):160-3.
- 632 Manley, A. R. (1983) The effects of copper on the behaviour, respiration, filtration and ventilation activity of *Mytilus edulis*. J. Mar. Biol. Assoc. U. K., 63(1):205-22.
- 633 Mann, R., and R. E. Taylor (1983) Public health aspects of the culture of the Japanese oyster *Crassostrea gigas* (Thunberg) in a waste recycling aquaculture system. Aquaculture, 30(1-4):311-27.
- 634 Marchand, M. (1985) Les composés organochlorés dans les eaux littorales. Exploitation des données de surveillances dans les mollusques du réseau national d'observation de la qualité du milieu marin (RNO) [Organochlorine compounds in marine coastal waters. Synthesis of data in mollusgs of the French Monitoring Program: Réseau National d'Observation de la qualité du milieu (RNO)]. Colloque Franco-Japonais d'Océanographique. Marseilles, France, September 16 - 21. 35-49 (French).
- 635 Marchand, M., and F. Cabane (1980) Hydrocarbures dans les moules et les huîtres. Rev. Int. Océanogr. Méd., LIX(-):3-30 (French).
- 636 Marchand, M., and E. Duursma (1975) Résidus de DDT et de polychlorobiphényles (PCB). Identification et dosage dans les moules et le plancton de la côte nord-ouest Méditerranéenne. Bull. Un. Oceanogr. Fr., 7(1-2):21-4 (French).

- 637 **Marchand, M., D. Vas, and E. K. Duursma (1976)** Levels of PCBs and DDTs in mussels from the N.W. Mediterranean. Mar. Pollut. Bull., 7(4): 65-9.
- 638 **Marchand, M., D. Vas, and E. Duursma (1974)** Résidus de DDT et de polychlorobiphényles (PCB) dans les moules, le sédiment et le plancton de la côte nord-ouest Méditerranéenne. les Journées Etud. Pollutions, -(-):171-4 (French). CIESM, Monaco.
- 639 **Marcos, G. B. (1975)** Residuos de insecticidas cloridas y PCB en algunas especies marinas del entorno europeo y su incidencia en la alimentación. Inv. Pesq., 39(1):219-24 (Spanish).
- 640 **Marcus, J. M., and R. T. Renfrow (1990)** Pesticides and PCBs in South Carolina estuaries. Mar. Pollut. Bull., 21(2):96-9.
- 641 **Marcus, J. M., and T. P. Stokes (1985)** Polynuclear aromatic hydrocarbons in oyster tissue around three coastal marinas. Bull. Environ. Contam. Toxicol., 35(6):835-44.
- 642 **Markin, G. P., Hawthorne, J. C., H. L. Collins, and J. H. Ford (1974)** Levels of mirex and some other organochlorine residues in seafood from Atlantic and Gulf coastal states. Pest. Monit. J., 7(-):139-43.
- 643 **Marks, G. W. (1938)** The copper content and copper tolerance of some species of molluscs of the Southern California coast. Biol. Bull., 75(2):224-37.
- 644 **Marmolejo Rivas, C., and F. Paez Osuna (1990)** Trace metals in tropical coastal lagoon bivalves *Mytella strigata*. Bull. Environ. Contam. Toxicol., 45(4):545-51.
- 645 **Marshall, A. T., and V. Talbot (1979)** Accumulation of cadmium and lead in the gills of *Mytilus edulis*: X-ray microanalysis and chemical analysis. Chem.-Biol. Interactions, 27(-):111-23.
- 646 **Martin, J. L. M. (1979)** Schema of lethal action of copper in mussels. Bull. Environ. Contam. Toxicol., 21(-):808-14.
- 647 **Martin, M. (1990)** Mussel Watch - sentinels of contamination in coastal California, USA. Abstracts, ACS, 199(1-2):137. 199th ACS National Meeting, April 22-27, 1990, Boston, MA.
- 648 **Martin, M. (1985)** State mussel watch: toxics surveillance in California. Mar. Pollut. Bull., 16(4):140-6.

- 649 **Martin M., D. Crane, T. Lew, and W. Seto (1980)** California mussel watch: 1979 - 1980. Synthetic organic compounds in mussels, *Mytilus californianus* and *M. edulis*, along the California coast and selected harbors and bays. *Water Quality Monitoring Rep.* 80-8, SWRCB, Sacramento, CA.
- 650 **Martin M., D. Crane, T. Lew, and W. Seto (1982)** California mussel watch: 1980 - 1981. Part III. Synthetic organic compounds in mussels, from California's coast, bays and estuaries. *Water Quality Monitoring Rep.* 81-11TS, SWRCB, Sacramento, CA.
- 651 **Martin, M., and E. Gutiérrez Galindo (1989)** Pesticides and PCBs in oysters from Mazatlán, Sinaloa, Mexico. *Mar. Pollut. Bull.*, 20(9):469-72.
- 652 **Martin, M., G. Ichikawa, J. Goetzl, M. de los Reyes, and M. D. Stephenson (1984)** Relationship between physiological stress and trace toxic substances in the bay mussel, *Mytilus edulis*, from San Francisco Bay, California. *Mar. Environ. Res.*, 11(2):91-110.
- 653 **Martin, M., and R. Severeid (1984)** Mussel watch monitoring for the assessment of trace toxic constituents in California marine waters. In: *Concepts in Marine Pollution*, White, H. H. (ed.), University of Maryland, College Park, MD.
- 654 **Martin, M., M. D. Stephenson, D. R. Smith, E. A. Gutiérrez Galindo, and G. F. Flores Muñoz (1988)** Use of silver in mussels as a tracer of domestic wastewater discharge. *Mar. Pollut. Bull.*, 19(10): 512-20.
- 655 **Martin, M., and W. Castle (1984)** Petrowatch: petroleum hydrocarbons, synthetic organic compounds, and heavy metals in mussels from the Monterey Bay area of central California. *Mar. Pollut. Bull.*, 15(7):259-66.
- 656 **Martin, M., K. E. Osborn, P. Billig, and N. Glickstein (1981)** Toxicities of ten metals to *Crassostrea gigas* and *Mytilus edulis* embryos and *Cancer magister* larvae. *Mar. Pollut. Bull.*, 12(9):305-8.
- 657 **Martincic, D., Z. Kwokal, M. Branica, and M. Stoeppler (1987)** Trace metals in selected organisms from the Adriatic Sea. *Mar. Chem.*, 22(2-4):207-20.
- 658 **Martincic, D., H. W. Nürnberg, and M. Branica (1987)** Bioaccumulation of metals by bivalves from the Limski Kanal north Adriatic Sea. III. Copper distribution between *Mytilus galloprovincialis* (Lmk.) and ambient water. *Sci. Total Environ.*, 60(-):121-42.
- 659 **Martincic, D., H. W. Nürnberg, M. Stoeppler, and M. Branica (1984)** Bioaccumulation of heavy metals by bivalves from Lim Fjord (North Adriatic Sea). *Mar. Biol.*, 81(2):277-88.

- 660 **Martincic, D., M. Stoepler, and M. Branica (1987)** Bioaccumulation of metals by bivalves from the Limski Kanal north Adriatic Sea. IV. Zinc distribution between *Mytilus galloprovincialis*, *Ostrea edulis* and ambient water. Sci. Total Environ., 60(-):143-172.
- 661 **Martoja, R., C. Ballan-Dufrancais, A. Y. Jeantet, P. Gouzerh, J. C. Amiard, C. Amiard-Triquet, B. Berthet, and J. P. Baud (1988)** Effets chimiques et cytologiques de la contamination experimentale de l'huître *Crassostrea gigas* Thunberg par l'argent administré sous dissoute et par voie alimentaire. Can. J. Fish Aquat. Sci., 45(10):1827-41.
- 662 **Mason, J. W., J. H. Cho, and A. C. Anderson (1976)** Uptake and loss of inorganic mercury in the eastern oyster (*Crassostrea virginica*). Arch. Environ. Contam. Toxicol., 4(-):361-76.
- 663 **Massachusetts Dept. of Public Health (1971)** Mercury levels in marine life and sediment. New England J. Med., 285(-):1031-2.
- 664 **Matheson R. A. F., G. F. Trider, W. R. Ernst, K. G. Hamilton, and P. A. Hennigar (1983)** Investigation of polynuclear aromatic hydrocarbon contamination of Sydney Harbor, Nova Scotia. EPS-5-AR-83-6, Environment Canada, Dartmouth, NS, Canada, 95 pp.
- 665 **Mazzucotelli, A., A. Viarengo, G. Martino, and R. Frache (1988)** Interactions among metals in the spectrochemical determination of trace amounts of cadmium in marine mussels. Mar. Environ. Res., 24(1-4): 129-33.
- 666 **McConchie, D. M., A. W. Mann, M. J. Lintern, D. Longman, V. Talbot, A. J. Gabelish, and M. J. Gabelish (1988)** Heavy metals in marine biota, sediments and waters from the Shark Bay area, Western Australia. J. Coastal Res., 4(1):37-58.
- 667 **McDermott D. J., D. R. Young, and T. C. Heesen (1974)** Polychlorinated biphenyls in marine organisms off Southern California. SCCWRP TM 223, So. California Coast. Water Res. Project, El Segundo, CA, 45 pp.
- 668 **McDowell-Capuzzo, J., and J. J. Sasner (1977)** The effect of chromium on filtration rates and metabolic activity of *Mytilus edulis* L. and *Mya arenaria*. In: Physiological Response of Marine Biota to Pollutants, Vernberg, F. J., Calabrese, A., Thurberg, F. P., Vernberg, A. (eds.), Academic Press, New York, NY, 225-37.
- 669 **McElroy, A. E., J. W. Farrington, and J. M. Teal (1989)** Bioavailability of polycyclic aromatic hydrocarbons in the aquatic environment. In: Metabolism of Polycyclic Aromatic Hydrocarbons, CRC Press, Boca Raton, 2-39.

- 670 **McFarren, E. F., J. E. Campbell, and J. B. Engle** (1961) The occurrence of copper and zinc in shellfish. Proc., Shellfish Sanitation Workshop. November 28-30, 1961. US Dept. of Health, Education and Welfare, Washington, DC. 229-34 (Appendix R).
- 671 **McGreer, E. R., B. J. Reid, and H. Nelson** (1981) Mobilization, bioaccumulation and sublethal effects of contaminants from marine sediments. Can. Tech. Rep. Fish. Aquat. Sci., 990(-):130-51.
- 672 **McHargue, J. S.** (1924) The significance of the occurrence of copper, manganese and zinc in shell-fish. Science, 60(-):530.
- 673 **McKee, J. S. C., D. Gallop, M. S. Mathur, A. A. Mirzai, Y. H. Yeo, C. Pinsky, and R. Bose** (1990) PIXE analysis of toxic mussels. Nucl. Instrum. Methods Phys. Res., Sect. B, B49(1-4):225-7.
- 674 **McKenzie-Parnell, J. M., T. E. Kjellstrom, R. P. Sharma, and M. F. Robinson** (1988) Unusually high intake and fecal output of cadmium, and fecal output of other trace elements in New Zealand adults consuming dredge oysters. Environ. Res., 46(1):1-14.
- 675 **McKie J. C.** (1986) The determination of tin and tributyltin in marine biological materials using graphite furnace atomic absorption spectrophotometry. ICES-CM-1986/E:6, International Council for the Exploration of the Sea, Copenhagen, Denmark, 15 pp.
- 676 **McKie, J. C.** (1987) Determination of total tin and tributyltin in marine biological materials by electrothermal atomic absorption spectrometry. Anal. Chim. A., 197(-):303-8.
- 677 **McMahon, P. J. T.** (1989) The impact of marinas on water quality. Water Sci. Technol., 21(2):39-43.
- 678 **Mearns A. J., M. B. Matta, D. Simecek-Beatty, M. F. Buchman, G. Shigeneka, and W. A. Wert** (1988) PCB and chlorinated pesticide contamination in U. S. fish and shellfish: a historical assessment. Tech. Memo. NOS OMA 39, NOAA/NOS/Coastal and Estuarine Assessment Branch, Rockville, MD.
- 679 **Mearns, J. C., and J. A. Calder** (1987) Assessment of chemical contaminants in sediments and organisms in the Gulf of Mexico. Interim report of NOAA's National Status and Trends Program. In: Abs., 194th American Chemical Society Meeting. New Orleans, LA, August 30 - September 4, 1987. American Chemical Society, Washington, DC. 116.
- 680 **Meeus-Verdinne, K., R. Van Cauter, and R. De Borger** (1983) Trace metal content in Belgian coastal mussels. Mar. Pollut. Bull., 14(5):198-200.

- 681 **Melo Costa, M. R., and M. V. Cais da Fonseca** (1967) The amount of natural arsenic in shellfish. Rev. Port. Farm., 17(1):1-19 (Chem. Abs., 67:63061z, 1967) (Portuguese).
- 682 **Menasveta, P., and V. Cheevaparanapiwat** (1981) Heavy metals, organochlorine pesticides and PCBs in green mussels, mullets and sediments of river mouths in Thailand. Mar. Pollut. Bull., 12(1):19-25.
- 683 **Metayer, C., C. Amiard-Triquet, and J. P. Baud** (1990) Variations inter-spécifiques de la bioaccumulation et de la toxicité de l'argent à l'égard de trois mollusques bivalves marins (Species-related variations of silver bioaccumulation and toxicity to three marine bivalves). Water Res., 24(8):995-1001 (French).
- 684 **Micallef, S., and P. A. Tyler** (1990) Effect of mercury and selenium on the gill function of *Mytilus edulis*. Mar. Pollut. Bull., 21(6):288-92.
- 685 **Micallef, S., and P. A. Tyler** (1987) Preliminary observations of the interactions of mercury and selenium in *Mytilus edulis*. Mar. Pollut. Bull., 18(4):180-5.
- 686 **Michel, P.** (1976) Cinétique d'épuration in-situ de moules contaminées par un gas-oil. Sci. Peche. Bull. Inst. Pêche Marit., -(259):1-11 (French).
- 687 **Michel, P., M. Marchand, D. Claisse, P. Masselin, and M. Luçon** (1988) Note de synthèse complémentaire pour les PCB, DDT et HPA dans les moules et les huîtres de 1977 à 1986. Dix Années de Surveillance 1974 - 1984. Polluants organiques, III, Réseau National d'Observation de la Qualité du Milieu Marin, IFREMER, Plouzané, France, 133-208 (French).
- 688 **Mikac, N., Z. Kwokal, K. May, and M. Branica** (1989) Mercury distribution in the Krka river estuary (eastern Adriatic coast). Mar. Chem., 28(1-3):106-26.
- 689 **Miller, B. S.** (1986) Trace metals in the common mussel *Mytilus edulis* (L.) in the Clyde estuary. Proc. Royal Soc. Edinburgh (Sec. B. Biol. Sci.), 90(-):377-91.
- 690 **Minchin D., and C. B. Duggan** (1986) Organotin contamination in Irish waters. ICES-CM-1986/F:48, International Council for the Exploration of the Sea, Copenhagen, Denmark, 9 pp.
- 691 **Ministry of Agriculture, Fisheries and Food** (1990) Monitoring and surveillance of non-radioactive contaminants in the aquatic environment, 1974 - 1987. Aquatic environment monitoring response no. 22, MAFF Directorate of Fisheries Research, Lowestoft, UK, 60 pp.

- 692 **Ministry of Agriculture, Fisheries and Food** (1991) Monitoring and surveillance of non-radioactive contaminants in the aquatic environment and activities regulating the disposal of wastes at sea, 1988 - 1989. Aquatic environment monitoring response no. 26, MAFF Directorate of Fisheries Research, Lowestoft, UK, 90 pp.
- 693 **Miranov, O. G., N. A. Pisareva, T. L. Shchekaturina, and B. P. Lapin** (1990) Determination of the composition of arenes in Black Sea mussels by high-performance liquid chromatography. Gidrobiol. Zh., 26(4):59-62.
- 694 **Mironov, O. G., T. L. Shchekaturina, N. A. Pisareva, L. R. Kopylenko, and B. P. Lapin** (1990) Background levels of aromatic hydrocarbons in the Black-Sea hydrobionts. Gidrobiol. Zh., 26(5):52-5.
- 695 **Mironov, O. G., and T. L. Shchekaturina** (1979) Oil change in excretory products of mussels (*Mytilus galloprovincialis*). Mar. Pollut. Bull., 10(-):232-4.
- 696 **Mironov, O. G., and T. L. Shchekaturina** (1977) To the question on hydrocarbon composition of the Black Sea mussels *Mytilus galloprovincialis*. Zoolog. J., 56(8):1250-2.
- 697 **Mix, M. C., S. R. Trenholm, and K. I. King** (1979) Benzo[a]pyrene body burdens and the prevalence of proliferative disorders in mussels (*Mytilus edulis*) in Oregon. Animals as Monitors of Environmental Pollutants, National Academy of Sciences, Washington, DC, 52-64.
- 698 **Mix, M. C., S. J. Hemingway, and R. L. Schaffer** (1982) Benzo[a]pyrene concentrations in somatic and gonad tissues of bay mussels, *Mytilus edulis*. Bull. Environ. Contam. Toxicol., 28(1):46-51.
- 699 **Mix, M. C., and R. L. Schaffer** (1979) Benzo[a]pyrene concentrations in mussels (*Mytilus edulis*) from Yaquina Bay, Oregon during June 1976 - May 1978. Bull. Environ. Contam. Toxicol., 23(4-5):677-84.
- 700 **Mix, M. C., and R. L. Schaffer** (1983) Concentrations of unsubstituted polynuclear aromatic hydrocarbons in bay mussels (*Mytilus edulis*) from Oregon, USA. Mar. Environ. Res., 9(4):193-209.
- 701 **Modin, J. C.** (1968) Pesticide concentrations in California bays and estuaries. In: Proc. Symp. on Mollusca. Part II. January 12 - 16, Marine Biology Association of India, Cochin, India. 519-30.
- 702 **Moeller, H., R. Schneider, and C. Schnier** (1983) Trace metal and polychlorinated biphenyl content of mussels (*Mytilus edulis*) from the southwestern Baltic Sea. Int. Rev. Gesamten Hydrobiol., 68(5):633-47.

- 703 Mohan, C. V., T. R. C. Gupta, H. P. C. Shetty, and N. R. Menon (1986) Combined toxicity of mercury and cadmium to the tropical green mussel, *Perna viridis*. Dis. Aquat. Orgms., 2(-):65-72.
- 704 Monier-Williams, G. W. (1938) Lead in food. Rep. Publ. Health Med. Subj., London, -(99):51.
- 705 Montgomery, J. R., and M. T. Price (1979) Release of trace metals by sewage sludge and the subsequent uptake by members of a turtle grass mangrove ecosystem. Environ. Sci. Technol., 13(5):546-549.
- 706 Moore, M. N. (1979) Cellular responses to polycyclic aromatic hydrocarbons and phenobarbital in *Mytilus edulis*. Mar. Environ. Res., 2(4):255-64.
- 707 Moore, M. N. (1986) Cytochemical responses of the lysosomal system and NADPH-ferrihemoprotein reductase in molluscan digestive cells to environmental and experimental exposure to xenobiotics. Mar. Ecol., 46(1-3): 81-9.
- 708 Moore, M. N., D. M. Lowe, and P. E. M. Fieth (1978) Lysosomal responses to experimentally injected anthracene in the digestive cells of *Mytilus edulis*. Mar. Biol., 48(4):297-302.
- 709 Moore, M. N., J. Widdows, J. J. I. Cleary, P. N. Salkeld, P. Donkin, S. V. Farrar, S. V. Evans, and P. E. Thomson (1984) Responses of the mussel *Mytilus edulis* to copper and phenanthrene: interactive effects. Mar. Environ. Res., 14(1-4):167-84.
- 710 Mowrer, J., J. Calambokidis, N. Musgrove, B. Drager, M. W. Beug, and S. G. Herman (1977) Polychlorinated biphenyls in cottids, mussels, and sediment in southern Puget Sound, Washington. Bull. Environ. Contam. Toxicol., 18(5):588-94.
- 711 Moyano, C. (1956) Arsenic content of several shellfish of the Peruvian coast. Bol. Soc. Quim. Peru, 22(-):5-16 (Chem. Abs., 51:2193a, 1957).
- 712 Müller H., R. Schneider, and C. Schnier (1980) PCBs and metals in mussels from the western Baltic. ICES-CM-1980/E:52, International Council for the Exploration of the Sea, Copenhagen, Denmark, 2 pp.
- 713 Murray A. J. (1979) Metals, organochlorine pesticides and PCB residue levels in fish and shellfish landed in England and Wales during 1974. Aquatic environment monitoring response no. 2, MAFF Directorate of Fisheries Research, Lowestoft, UK, 43 pp.

- 714 **Murray A. J.** (1981) Metals, organochlorine pesticides and PCB residue levels in fish and shellfish landed in England and Wales during 1975. Aquatic environment monitoring response no. 5, MAFF Directorate of Fisheries Research, Lowestoft, UK, 40 pp.
- 715 **Murray, A. J.** (1982) Trace metals and organochlorine pesticides and PCB residues in mussels from England and Wales, 1978. Chem. Ecol., 1(1):33-45.
- 716 **Murray A. J., and R. J. Law** (1980) Results of a mussel watch programme in England and Wales. 1977 and 1978. ICES-CM-1980/E:15, International Council for the Exploration of the Sea, Copenhagen, Denmark, 14 pp.
- 717 **Murray A. J., and M. G. Norton** (1982) The field assessment of effects of dumping wastes at sea. 10: Analysis of chemical residues in fish and shellfish from selected coastal regions around England and Wales. Aquatic environment monitoring response no. 69, MAFF Directorate of Fisheries Research, Lowestoft, UK, 42 pp.
- 718 **Murray A. J., and J. E. Portmann** (1984) Metals, organochlorine pesticides and PCB residues in fish and shellfish in England and Wales in 1976 and trends since 1970. Aquatic environment monitoring response no. 10, MAFF Directorate of Fisheries Research, Lowestoft, UK, 79 pp.
- 719 **Murray, H. E., G. S. Neff, Y. Hrungr, and C. S. Giam** (1980) Determination of benzo[a]pyrene, hexachlorobenzene and pentachlorophenol in oysters from Galveston Bay, Texas. Bull. Environ. Contam. Toxicol., 25(4):663-7.
- 720 **Naidu, J. R., and A. H. Seymour** (1968) Accumulation of zinc by oysters in Willapa Bay, Washington. In: Proc. Symp. on Mollusca. Part II. January 12 - 16, Marine Biology Association of India, Cochin, India. 463-74.
- 721 **Najdek, M., and D. Bazulic** (1988) Chlorinated hydrocarbons in mussels and some benthic organisms from the northern Adriatic sea. Mar. Pollut. Bull., 19(1):37-8.
- 722 **Najdek, M., and D. Bazulic** (1983) Ostaci ukupne i metil zive u nekim ribama i školjkama sjevernog jadrana (Residues of total and methyl mercury in some fish and mussels of the northern Adriatic Sea). Arh. Hig. Rada Toksikol., 34(3):229-32 (Serbo-Croatian).
- 723 **Najdek, M., and J. Sapunar** (1987) Total and methylmercury content in bivalves, *Mytilus galloprovincialis* Lamarck and *Ostrea edulis* Linnaeus: relationship of biochemical composition and body size. Bull. Environ. Contam. Toxicol., 39(1):56-62.

- 724 **Nakamura, A., and T. Kashimoto** (1978) Quantitation of sulfur containing oil compounds and polychlorinated biphenyls (PCB) in marine samples. Bull. Environ. Contam. Toxicol., 20(2):248-54.
- 725 **Nasci, C., G. Campesan, V. U. Fossato, F. Dolci, and A. Menetto** (1989) Hydrocarbon content and microsomal BPH and reductase activity in mussel, *Mytilus* sp., from the Venice area, north-east Italy. Mar. Environ. Res., 28(1-4):109-12.
- 726 **Nasci, C., and V. U. Fossato** (1982) Studies on physiology of mussels and their ability in accumulating hydrocarbons and chlorinated hydrocarbons. Environ. Technol. Lett., 3(6):273-80.
- 727 **National Academy of Sciences** (1980) Fossil fuels. (J. Farrington, Session Chairman). Rep. Workshop The International Mussel Watch. Barcelona, Spain, December 4 - 7, 1978. National Academy of Science, Washington, DC. 7-77.
- 728 **National Academy of Sciences** (1980) Halogenated hydrocarbons. (A. V. Holden, Session Chairman). Rep. Workshop The International Mussel Watch. Barcelona, Spain, December 4 - 7, 1978. National Academy of Science, Washington, DC. 133-142.
- 729 **National Academy of Sciences** (1980) Monitoring strategies for the protection of the coastal zone. (R. Risebrough, Session Chairman). Rep. Workshop The International Mussel Watch. Barcelona, Spain, December 4 - 7, 1978. National Academy of Science, Washington, DC. 236-43.
- 730 **National Oceanic and Atmospheric Administration** (1987) National Status and Trends Program for Marine Environmental Quality progress report: A summary of selected data on chemical contaminants in tissues collected during 1984, 1985, and 1986. Tech. Memo. NOS OMA 38, NOAA/NOS/Coastal and Estuarine Assessment Branch, Rockville, MD, 23 pp.
- 731 **National Oceanic and Atmospheric Administration** (1989) National Status and Trends Program for Marine Environmental Quality progress report: a summary of data on tissue contamination from the first three years (1986-1988) of the Mussel Watch Project. Tech. Memo. NOS OMA 49, NOAA/NOS/Coastal and Estuarine Assessment Branch, Rockville, MD, 22 pp. and appendices.
- 732 **National Academy of Sciences** (1980) Overview. Rep. Workshop The International Mussel Watch. Barcelona, Spain, December 4 - 7, 1978. NAS, Washington, DC. 4-6.
- 733 **National Academy of Sciences** (1975) Petroleum in the marine environment. Proc. Workshop on Inputs, Fates, and Effects of Petroleum in the Marine Environment. May 21 - 25, 1973. NAS, Washington, DC. Biological: 58-72.

- 734 **National Academy of Sciences** (1980) Trace metals. (D. J. H. Phillips, Session Chairman). Rep. Workshop The International Mussel Watch. Barcelona, Spain, December 4 - 7, 1978. NAS, Washington, DC. 78-132.
- 735 **Nazansky, B., N. Picer, M. Picer, and M. Ahel** (1978) Monitoring of chlorinated hydrocarbons in biota of the north and middle Adriatic coastal waters. In: Proc., Symp. on Pollution of the Mediterranean. Anatalya, Turkey, November 24 - 27, 1978. ICSEM/UNEP, Monaco.
- 736 **Neff, J. M., B. A. Cox, D. Dixit, and J. W. Anderson** (1976) Accumulation and release of petroleum-derived aromatic hydrocarbons by four species of marine animals. Mar. Biol., 38(3):279-89.
- 737 **Neff, J. M., and W. E. Haensley** (1982) Long-term impact of the Amoco Cadiz crude oil spill on oysters *Crassostrea gigas* and plaice *Pleuronectes platessa* from Aber Benoit and Aber Wrac'h, Brittany, France. I. Oyster histopathology. II. Petroleum contamination and biochemical indices in stress in oysters and plaice. NOAA-CNEXO, Rockville, MD, 269-327.
- 738 **Nelson, J.** (1915) Copper content of green oysters. N. J. Agr. Expt. Sta. Ann. Rep., 36(-):246-9 (Chem. Abs., 11:2593, 1917).
- 739 **Nickless, G., R. Stenner, and N. Terrille** (1972) Distribution of cadmium, lead and zinc in the Bristol Channel. Mar. Pollut. Bull., 3(12):188-90.
- 740 **Nielsen, S. A.** (1975) Cadmium in New Zealand dredge oysters: geographic distribution. Int. J. Environ. Anal. Chem., 4(-):1-7.
- 741 **Nielsen, S. A.** (1974) Vertical concentration gradients of heavy metals in cultured mussels. N. Z. J. Mar. Freshwater Res., 8(-):631-6.
- 742 **Nielsen, S. A., and A. Nathan** (1975) Heavy metal levels in New Zealand molluscs. N. Z. J. Mar. Freshwater Res., 9(4):467-81.
- 743 **Nieuwenhuize J., and J. M. Van Liere** (1982) De calibratie van totaal kwik in sediment, plantaardig materiaal en mosselen door middel van vlamloze atomaire absorptie (The calibration of the total amount of mercury in sediment, vegetable material and mussels by means of flameless atomic absorption). 19821, Delta Inst. For Hydrobiological Research, Yerseke, Netherlands, 23 pp.
- 744 **Nilson, H. W., and E. J. Coulson** (1939) The mineral content of the edible portions of some American fishery products. Invest. Rep. U. S. Bur. Fish., 41(-):1-7.
- 745 **Nisbet, I. C. T., and L. M. Reynolds** (1984) Organochlorine residues in common terns and associated estuarine organisms, Massachusetts, USA, 1971-81. Mar. Environ. Res., 11(1):33-66.

- 746 **Nolan, C.** (1985) Edible mussels and the metal cadmium. Maritimes, 29(-):4-6.
- 747 **Nordberg M., M. G. Cheridan, and T. Kjellstroem** (1983) Defense mechanisms against metal toxicity and their potential importance for risk assessments with particular reference to the importance of various binding forms in food stuffs. KHMTR55, Statens Vattenfallsverk, Vaellingby, Sweden, 49 pp.
- 748 **Nott, J. A., and M. N. Moore** (1987) Effects of polycyclic aromatic hydrocarbons on molluscan lysosomes and endoplasmic reticulum. Histochem. J., 19(6-7):357-68.
- 749 **Nott, J. A., M. N. Moore, L. j. Mavin, and K. P. Ryan** (1985) The fine structure of lysosomal membranes and endoplasmic reticulum in the digestive cells of *Mytilus edulis* exposed to anthracene and phenanthrene. Mar. Environ. Res., 17(2-4):226-9.
- 750 **Obana, H., S. Hori, and T. Kashimoto** (1981) Determination of polycyclic aromatic hydrocarbons in marine samples by high-performance liquid chromatography. Bull. Environ. Contam. Toxicol., 26(5):613-20.
- 751 **Ober, A., M. Valdivia, and I. Santa Maria** (1987) Organochlorine pesticide residues in Chilean fish and shellfish species. Bull. Environ. Contam. Toxicol., 38(3):528-33.
- 752 **Ober, A. G., M. Gonzalez, and I. Santa Maria** (1987) Heavy metals in molluscan, crustacean, and other commercially important Chilean marine coastal water species. Bull. Environ. Contam. Toxicol., 38(3):534-9.
- 753 **O'Connor T. P.** (1990) Coastal Environmental Quality in the United States, 1990: Chemical Contamination in Sediments and Tissues. Special NOAA 20th Anniversary Report, NOAA/NOS/Coastal and Estuarine Assessment Branch, Rockville, MD, 34 pp.
- 754 **O'Connor, T. P.** (1991) Concentrations of organic contaminants in mollusks and sediments at NOAA National Status and trends sites in the coastal and estuarine United States. Environ. Health Perspec., 90(-): 69-73.
- 755 **O'Connor, T., and C. N. Ehler** (1991) Results from the NOAA National Status and Trends Program on distribution and effects of chemical contamination in the coastal and estuarine United States. Environ. Monit. Assess., 17(-): 33-49.
- 756 **Ogata, M., K. Fujisawa, Y. Ogino, and E. Mano** (1984) Partition coefficients as a measure of bioconcentration potential of crude oil compounds in fish and shellfish. Bull. Environ. Contam. Toxicol., 33(5):561-7.

- 757 **Ohira, S., and S. Matsui** (1990) Simultaneous determination of butyltin and phenyltin compounds in oysters by capillary gas chromatography. J. Chromatogr. Biomed. Appl., 525(1):105-12.
- 758 **Okazaki, R. K., and M. H. Panietz** (1981) Depuration of twelve trace metals in tissues of the oysters *Crassostrea gigas* and *C. virginica*. Mar. Biol., 63(2):113-20.
- 759 **Olafsson, J.** (1986) Trace metals in mussels (*Mytilus edulis*) from southwest Iceland. Mar. Biol., 90(2):223-9.
- 760 **Orren, M. J., G. A. Eagle, H. F. K. Hennig, and A. Green** (1980) Variations in trace metal content of the mussel *Choromytilus meridionalis* (Kr.) with season and sex. Mar. Pollut. Bull., 11(9):253-7.
- 761 **Orton, J. H.** (1924) An account of investigation into the cause or causes of the unusual mortality among oyster in English oysterbeds during 1920 and 1921. Fish. Invest., (2)6(3):199 (quoted in Vinogradov, 1953).
- 762 **Orton, J. H.** (1928) Oysters and possible pollution. Munic. Eng. Sanit. Record, 82(-):99-100 (Chem. Abs., 23:2507, 1929).
- 763 **Osibanjo, O., and O. Bamgbose** (1990) Chlorinated hydrocarbons in marine fish and shellfish of Nigeria. Mar. Pollut. Bull., 21(12):581-6.
- 764 **Osuna Lopez, J. I., H. M. Zazueta Padilla, A. Rodriguez Higuera, and F. Páez Osuna** (1990) Trace metal concentrations in mangrove oyster (*Crassostrea corteziensis*) from tropical lagoon environments, Mexico. Mar. Pollut. Bull., 21(10):486-88.
- 765 **Otterling, G.** (1969) DDT and PCB in marine animals from Swedish waters. Nature, 224(5216):247-250.
- 766 **Ouellette T. R.** (1978) Seasonal variation of trace metals and the major inorganic ions in the mussel *Mytilus californianus*. Master's Thesis, California State University, Hayward, CA.
- 767 **Ouellette, T. R.** (1981) Seasonal variation of trace metals in the mussel *Mytilus californianus*. Environ. Conserv., 8(1):53-58.
- 768 **Ozretic, B., M. Krajnovic Ozretic, J. Santin, B. Medjugorac, and M. Kras** (1990) As, Cd, Pb, and Hg in benthic animals from the Kvarner-Rijeka Bay region, Yugoslavia. Mar. Pollut. Bull., 21(12):595-8.
- 769 **Paasivirta, J., R. Herzsuh, M. Lahtipera, J. Pellinen, and S. Sinkkonen** (1981) Oil residues in Baltic sediment, mussel and fish. I. Development of the analysis methods. Chemosphere, 10(8):919-28.

- 770 Páez Osuna, F., G. Izaguirre Fierro, R. I. Godoy Meza, F. Gonzalez Farias, and J. I. Osuna Lopez (1988) Heavy metals in four species of filter feeding organisms from the coastal area of Mazatlan: extraction techniques and concentrations. Contam. Ambiental, 4(1):33-41.
- 771 Páez Osuna, F., and C. Marmolejo Rivas (1990) Occurrence and seasonal variation of heavy metals in the oyster *Saccostrea iridescens*. Bull. Environ. Contam. Toxicol., 44(-):129-34.
- 772 Páez Osuna, F., and C. Marmolejo Rivas (1990) Trace metals in tropical coastal lagoon bivalves *Crassostrea corteziensis*. Bull. Environ. Contam. Toxicol., 45(4):538-44.
- 773 Page, D. S. (1988) An analytical method for butyltin species in shellfish. Mar. Pollut. Bull., 20(3):129-33.
- 774 Page, D. S., E. S. Gilfillan, J. Foster, and J. Widdows (1990) Tributyltin in *Mytilus edulis* from coastal locations in Devon and Cornwall (UK) and Maine (US) and its effect on shell morphology. Mar. Environ. Res., 28(1-4):539-40.
- 775 Palmork, K. H., and J. E. Solbakken (1981) Distribution and elimination of (9-14C)-phenanthrene in the horse mussel (*Modiolus modiolus*). Bull. Environ. Contam. Toxicol., 26(2):196-201.
- 776 Pancirov, R. J., and R. A. Brown (1977) Polynuclear aromatic hydrocarbons in marine tissues. Environ. Sci. Technol., 11(10):989-91.
- 777 Park, C. K., J. R. Pyen, and S. J. You (1989) Mercury pollution in the Onsan coastal area. Han'guk Susan Hakhoechi, 22(5):233-40 (Korean).
- 778 Parrish, P. R. (1975) Toxicity of Aroclor 1254 and its physiological activity in several estuarine organisms. Arch. Environ. Contam. Toxicol., 3(1):22-39.
- 779 Pascual, E., and R. Establier (1974) Variaciones del contenido en cobre, hierro, manganeso y cinc en relación con la maduración sexual del ostión, *Crassostrea angulata*, de las costas de Cádiz. Inv. Pesq., 38(-):387-95 (Spanish).
- 780 Pastor, A., F. Hernandez, J. Medina, R. Melero, F. J. Lopez, and M. Conesa (1988) Organochlorine pesticides in marine organisms from the Castellon and Valencia coasts of Spain. Mar. Pollut. Bull., 19(5):235-8.
- 781 Paul, B. H., and A. J. Cownley (1896) The detection of copper in vegetable substances. Pharm. J., 2(-):441-2.

- 782 Paul J. D., and I. M. Davies (1986) The effect of copper and tin-based anti-fouling compounds on the growth of scallops (*Pecten maximus*) and oysters (*Crassostrea gigas*). ICES-CM-1986/F:13, International Council for the Exploration of the Sea, Copenhagen, Denmark, 13 pp.
- 783 Paul, J. D., and I. M. Davies (1986) Effects of copper- and tin-based anti-fouling compounds on the growth of scallops (*Pecten maximus*) and oysters (*Crassostrea gigas*). Aquaculture, 54(-):191-203.
- 784 Pavicic, J., M. Skreblin, and I. Kregar (1985) Heavy metals tolerance of developing veliger of *Mytilus galloprovincialis* in relation to induced synthesis of metal-binding proteins. In: Heavy Metals in the Environment (International Conf.). Vol. II. Athens, Greece, September, 1985. CEP Consultants Ltd., Edinburgh, UK. 58.
- 785 Pavoni, B., A. Sfriso, and S. Racanelli (1991) Quantification of PCBs in environmental samples: comparison of results obtained with different analytical instruments (GC-ECD, GC-MS). Int. J. Environ. Anal. Chem., 44(1):11-20.
- 786 Pearson, C. R., and G. McConnell (1975) Chlorinated C-1 and C-2 hydrocarbons in the marine environment. Proc. Royal Soc. London, B189(-):305-32.
- 787 Peerzada, N., and C. Dickson (1988) Heavy metal concentration in oysters from Darwin Harbour. Mar. Pollut. Bull., 19(4):269-74.
- 788 Peerzada, N., and C. Dickinson (1989) Metals in oysters from the Arnhem Land coast, Northern Territory, Australia. Mar. Pollut. Bull., 20(3):144-5.
- 789 Peerzada, N., L. McMorro, S. Skiliros, M. Guinea, and P. Ryan (1990) Distribution of heavy metals in Gove Harbour, Northern Territory, Australia. Sci. Total Environ., 92(-):1-12.
- 790 Pelletier, E. (1988) Acute toxicity of some methylmercury complexes to *Mytilus edulis* and lack of selenium protection. Mar. Pollut. Bull., 19(5): 213-8.
- 791 Pelletier, E. (1986) Modification de la bioaccumulation du sélénium chez *Mytilus edulis* en présence du mercure organique et inorganique. Can. J. Fish. Aquat. Sci., 43(-):203-10.
- 792 Penrose, W. R., R. Black, and M. J. Hayward (1975) Limited arsenic dispersion in sea water, sediments, and biota near a continuous source. J. Fish. Res. Bd. Can., 32(-):1275-81.

- 793 **Pequegnat, J. E., S. W. Fowler, and L. F. Small (1969)** Estimates of the zinc requirements of marine organisms. J. Fish. Res. Bd. Can., 26(-): 145-50.
- 794 **Perdriau, J. (1964)** Pollution marine par les hydrocarbures cancerigenes - type benzo-3,4-pyrene - incidences biologiques. Cah. Oceanogr., 16(-): 205-29 (French).
- 795 **Petrick, G., D. E. Schulz, and J. C. Duinker (1988)** Clean-up of environment samples by high-performance liquid chromatography for analysis of organochlorine compounds by gas chromatography with electron-capture detection. J. Chromatogr., 435(1):241-8.
- 796 **Petrocelli, S. R., J. W. Anderson, and A. R. Hanks (1974)** DDT and dieldrin residues in selected biota from San Antonio Bay, Texas - 1972. Pest. Monit. J., 8(-):167-72.
- 797 **Pfannhauser, W. (1983)** Species of heavy metals present in some foods. Chemosphere, 12(7-8):1061-4.
- 798 **Pfeiffer, W. C., M. Fiszman, and L. C. Laderda (1988)** Heavy metal surveys in Brazilian coastal environments. Metals in Coastal Environments of Latin America, Springer-Verlag, New York, 3-8.
- 799 **Phelps, D. K., and W. B. Galloway (1980)** A report on the Coastal Environmental Assessment Stations (CEAS) Program. Rapp. P.-V. Reun. Cons. Int. Explor. Mer., 179(-):76-81.
- 800 **Phelps H. L. (1983)** Effect of Aufwuchs copper on spat settlement of the oyster *Crassostrea virginica*. OWRTA010DC1, Office of Water Research and Technology, Washington, DC, 43 pp.
- 801 **Phelps, H. L., and E. W. Hetzel (1987)** Oyster size, age, and copper and zinc accumulation. J. Shellfish Res., 6(2):67-70.
- 802 **Phelps, H. L., D. A. Wright, and J. A. Mihursky (1985)** Factors affecting trace metal accumulation by estuarine oysters *Crassostrea virginica*. Mar. Ecol., 22(2):187-198.
- 803 **Phillips, D. J. H. (1976)** The common mussel *Mytilus edulis* as an indicator of pollution of zinc, cadmium, lead, copper. I. Effects of environmental variables on the uptake of metals. Mar. Biol., 38(-):59-69.
- 804 **Phillips, D. J. H. (1976)** The common mussel *Mytilus edulis* as an indicator of pollution by zinc, cadmium, lead and copper. II. Relationship of metals in the mussel to those discharged by industry. Mar. Biol., 38(-): 71-80.

- 805 Phillips, D. J. H. (1977) The common mussel *Mytilus edulis* as an indicator of trace metals in Scandinavian waters. I. Zinc and cadmium. Mar. Biol., 43(4):283-91.
- 806 Phillips, D. J. H. (1978) The common mussel *Mytilus edulis* as an indicator of trace metals in Scandinavian waters. II. Lead, iron and manganese. Mar. Biol., 46(2):147-156.
- 807 Phillips, D. J. H. (1981) A comparative evaluation of oysters *Saccostrea glomerata* equals *Crassostrea glomerata* mussels *Septifer bilocularis* and sediments as indicators of trace metals in Hong-Kong waters. Mar. Ecol., 6(3):285-294.
- 808 Phillips, D. J. H. (1977) Effects of salinity on the net uptake of zinc by the common mussel *Mytilus edulis*. Mar. Biol., 41(1):79-88.
- 809 Phillips, D. J. H. (1985) Organochlorines and trace metals in green-lipped mussels *Perna viridis* from Hong-Kong waters: a test of indicator ability. Mar. Ecol., 21(3):251-8.
- 810 Phillips, D. J. H. (1980) Quantitative Aquatic Biological Indicators. Applied Science Publishers. Ltd., London, UK, 488pp.
- 811 Phillips, D. J. H. (1979) The rock oyster *Saccostrea glomerata* as an indicator of trace metals in Hong Kong. Mar. Biol., 53(4):353-360.
- 812 Phillips, D. J. H. (1979) Trace metals in the common mussel *Mytilus edulis* (L.) and in the alga *Fucus vesiculosus* (L.) from the region of the Sound (Oresund). Environ. Pollut., 18(1):31-44.
- 813 Phillips, D. J. H. (1989) Trace metals and organochlorines in the coastal waters of Hong Kong. Mar. Pollut. Bull., 20(7):319-27.
- 814 Phillips, D. J. H. (1978) The use of biological indicator organisms to quantitate organochlorine pollutants in aquatic environments. A review. Environ. Pollut., 16(3):167-230.
- 815 Phillips, D. J. H., C. T. Ho, and L. H. Ng (1982) Trace elements in the Pacific oyster in Hong Kong. Arch. Environ. Contam. Toxicol., 11(5):533-7.
- 816 Phillips, D. J. H., and K. Muttarasin (1985) Trace metals in bivalve molluscs from Thailand. Mar. Environ. Res., 15(3):215-234.
- 817 Phillips, D. J. H., and P. S. Rainbow (1988) Barnacles and mussels as biomonitors of trace elements: a comparative study. Mar. Ecol., 49(1-2): 83-93.

- 818 Phillips, D. J. H., and D. A. Segar (1986) Use of bio-indicators in monitoring conservative contaminants: programme design imperatives. Mar. Pollut. Bull., 17(1):10-7.
- 819 Phillips, D. J. H., and R. B. Spies (1988) Chlorinated hydrocarbons in the San Francisco estuarine ecosystem. Mar. Pollut. Bull., 19(9): 445-53.
- 820 Phillips, D. J. H., and W. W. S. Yim (1981) A comparative evaluation of oysters, mussels and sediments as indicators of trace metals in Hong Kong waters. Mar. Ecol., 6(-):285-93.
- 821 Phillips P. T. (1988) California state mussel watch ten year data summary 1977 - 1987. Water Quality Monitoring Rep. 87-3, California State Water Resources Control Board, Sacramento, CA.
- 822 Picard-Bérubé, M., and D. Cossa (1983) Teneurs en benzo-3,4-pyrene chez *Mytilus edulis* L. de l'estuarine et du Golfe du Saint-Laurent. Mar. Environ. Res., 10(-):63-71 (French).
- 823 Picer, M., N. Picer, and M. Ahel (1978) Chlorinated insecticide and PCB residues in fish and mussels of east coastal waters of the middle and north Adriatic Sea, 1974-75. Pest. Monit. J., 12(3):102-12.
- 824 Picer, N., and M. Picer (1990) Long term trends of DDT and PCB concentrations in mussels *Mytilus galloprovincialis*. Chemosphere, 21(1-2):153-8.
- 825 Pickwell, G. V., and S. A. Steinert (1988) Accumulation and effects of organotin compounds in oysters and mussels: correlation with serum biochemical and cytological factors and tissue burdens. Mar. Environ. Res., 24(1-4):215-8.
- 826 Piepponen, S., and R. Lindstrom (1989) Data analysis of heavy metal pollution in the sea by using principal component analysis and partial least squares regression. Chemometrics Intelligent. Lab. Syst., 7(1-2):163-70.
- 827 Pinel, R., and H. Madiec (1986) Determination of "heavy" organotin pollution of water and shellfish by a modified hydride atomic absorption procedure. Int. J. Environ. Anal. Chem., 27(4):265-71.
- 828 Pipe, R. K., and M. N. Moore (1986) Arylsulfatase activity associated with phenanthrene induced digestive cell deletion in the marine mussel *Mytilus edulis*. Histochem. J., 18(10):557-64.
- 829 Pittinger, C. A., A. L. Buikema, and J. O. Falkinham (1987) In-situ variations in oyster mutagenicity and tissue concentrations of polycyclic aromatic hydrocarbons. Environ. Toxicol. Chem., 6(1):51-60.

- 830 **Pittinger, C. A., A. L. ,. Buikema, S. G. Hornor, and R. W. Young** (1985) Variation in tissue burdens of polycyclic aromatic hydrocarbons in indigenous and relocated oysters. Environ. Toxicol. Chem., 4(3):379-87.
- 831 **Pollkarpov, G. G., D. L. Elder, S. W. Fowler, G. Benayoun, and P. Parsi** (1978) Sediments, water and food chains as sources of chlorinated hydrocarbons for benthic organisms in the Mediterranean Sea. In: Proc., Symp. on Pollution of the Mediterranean. Anatalya, Turkey, November 24 - 27, 1978. ICSEM/UNEP, Monaco.
- 832 **Popham, J. D., and J. M. D'Auria** (1983) Combined effect of body size, season, and location on trace element levels in mussels (*Mytilus edulis*). Arch. Environ. Contam. Toxicol., 12(1):1-14.
- 833 **Popham, J. D., and J. M. D'Auria** (1982) Effects of season and seawater concentrations on trace metal concentrations in organs of *Mytilus edulis*. Arch. Environ. Contam. Toxicol., 11(3):273-82.
- 834 **Popham, J. D., and J. M. D'Auria** (1981) Statistical models for estimating seawater metal concentrations from metal concentrations in mussels (*Mytilus edulis*). Bull. Environ. Contam. Toxicol., 27(5):660-70.
- 835 **Popham, J. D., and J. M. D'Auria** (1983) Statistical approach for deciding if mussels (*Mytilus edulis*) have been collected from a water body polluted with trace metals. Environ. Sci. Technol., 17(10):576-82.
- 836 **Porte, C., D. Barcelo, and J. Albaiges** (1988) Quantitation of total versus selected polychlorinated biphenyl congeners. J. Chromatogr., 442(-):386-93.
- 837 **Portmann J. E.** (1979) Chemical monitoring of residue levels in fish and shellfish landed in England and Wales during 1970-73. Aquatic environment monitoring response no. 1, MAFF Directorate of Fisheries Research, Lowestoft, UK, 21 pp.
- 838 **Portmann J. E., and J. D. Yardley** (1972) The distribution of some metals in shellfish taken from the coasts of England and Wales. ICES-CM-1972/K:12, International Council for the Exploration of the Sea, Copenhagen, Denmark, 5 pp.
- 839 **Poulsen, E., H. U. Rijsgard, and F. Molenberg** (1982) Accumulation of cadmium and bioenergetica in the mussel *Mytilus edulis*. Mar. Biol., 68(-): 25-9.
- 840 **Presley, B. J., and P. N. Boothe** (1987) Trace elements in Gulf of Mexico sediment and oysters from the NOAA Status and Trends Program. In: Abs., 194th American Chemical Society Meeting. New Orleans, LA, August 30 - September 4, 1987. American Chemical Society, Washington, DC. 143.

- 841 Presley, B. J., R. J. Taylor, and P. N. Boothe (1990) Trace metals in Gulf of Mexico oysters. Sci. Total Environ., 97/98(-):551-63.
- 842 Pridmore, R. D., D. S. Roper, and J. E. Hewitt (1990) Variation in composition of the Pacific oyster, *Crassostrea gigas*, along a pollution gradient in Manukau Harbour, New Zealand. Mar. Environ. Res., 30(3):163-77.
- 843 Pringle, B. H., D. E. Hissong, E. L. Katz, and S. T. Mulawka (1968) Trace metal accumulation by estuarine mollusks. J. Sanit. Eng. Div., Proc. Amer. Soc. Civil Eng., 94(-):455-75.
- 844 Pruell, R. J., J. L. Lake, W. R. Davis, and J. G. Quinn (1986) Uptake and depuration of organic contaminants by blue mussels (*Mytilus edulis*) exposed to environmentally contaminated sediment. Mar. Biol., 91(4):497-508.
- 845 Pruell, R. J., W. G. Nelson, and D. J. Cobb (1990) Bioaccumulation of PCB congeners in mussels caged in New Bedford harbor, Massachusetts, USA. Abstracts. ACS, 199(1-2):125. 199th ACS National Meeting, April 22-27, 1990, Boston, MA.
- 846 Pruell, R. J., J. G. Quinn, J. L. Lake, and W. R. Davis (1987) Availability of PCBs and PAHs to *Mytilus edulis* from artificially resuspended sediments. In: Biological Processes and Wastes in the Ocean, Oceanic Processes in Marine Pollution, Vol. 1, Capuzzo, J. M., Kester, D. R. (eds.), Robert E. Krieger, Malabar, FL, 97-108.
- 847 Prytherch, H. F. (1931) The role of copper in setting and metamorphosis of the oyster. Science, 73(-):429-31 (Chem. Abs., 25:3401, 1931).
- 848 Prytherch, H. F. (1934) The role of copper in the setting, metamorphosis and distribution of the American oyster. Ecol. Monographs, 4(-):47-107 (Chem. Abs., 28:6205, 1934).
- 849 Quevauviller, P., R. Lavigne, R. Pinel, and M. Astruc (1989) Organotins in sediments and mussels from the Sado estuarine system Portugal. Environ. Pollut., 57(2):149-66.
- 850 Quirijns, J. K., C. G. Van der Paauw, M. C. Ten Noever de Brauw, and R. H. De Vos (1979) Survey of the contamination of Dutch coastal waters by chlorinated hydrocarbons including the occurrence of methylthio-pentachlorobenzene and di-(methylthio)tetrachlorobenzene. Sci. Total Environ., 13(3):225-34.
- 851 Rainio, K., R. R. Linko, and L. Ruotsila (1986) Polycyclic aromatic hydrocarbons in mussel and fish from the Finnish archipelago sea. Bull. Environ. Contam. Toxicol., 37(3):337-43.

- 852 Rajendran, N., R. Rajendran, O. Matsuda, and V. K. Venugopalan (1989) Acute toxicity of organochlorine pesticides to fishes and shellfishes of a tropical estuary. J. Fac. Appl. Biol. Sci. Hiroshima Univ., 28(1-2): 37-48.
- 853 Ramelow, G. J., C. L. Webre, C. S. Mueller, J. N. Beck, J. C. Young, and M. P. Langley (1989) Variations of heavy metals and arsenic in fish and other organisms from the Calcasieu river and lake Louisiana USA. Arch. Environ. Contam. Toxicol., 18(6):804-18.
- 854 Ramelow, G. J. (1984) Levels of selected trace metals in mussels collected in the Izmit Bay area. Chim. A. Turc., 12(2):195-202.
- 855 Ramesh, A., S. Tanabe, A. N. Subramanian, D. Mohan, V. K. Venugopalan, and R. Tatsukawa (1990) Persistent organochlorine residues in green mussels from coastal waters of south India. Mar. Pollut. Bull., 21(12):587-90.
- 856 Rasmussen, L. F., and D. C. Williams (1975) The occurrence and distribution of mercury in marine organisms in Bellingham Bay. Northwest Sci., 49(-):87-94.
- 857 Ratkowsky, D. A., S. J. Thrower, I. J. Eustace, and J. Olley (1974) A numerical study of the concentration of some heavy metals in Tasmanian oysters. J. Fish. Res. Bd. Can., 31(-):1165-71.
- 858 Ray, L. E., and C. S. Giam (1984) Organic pollutants in Texas coastal waters. Mar. Environ. Res., 14(1-4):513-4.
- 859 Redpath, K. J., and J. Davenport (1988) The effect of copper, zinc and cadmium on the pumping rate of *Mytilus edulis* L. Aquat. Toxicol., 13(3): 217-2.
- 860 Rees, H. L., and M. D. Nicholson (1989) Trends in lead levels in the horse mussel from the western North Sea. Mar. Pollut. Bull., 20(2):86-9.
- 861 Reimer, A. A., and R. D. Reimer (1975) Total mercury in some fish and shellfish along the Mexican coast. Bull. Environ. Contam. Toxicol., 14(-):105-11.
- 862 Reimoid, R. J. (1975) Chlorinated hydrocarbon pesticides and mercury in coastal biota, Puerto Rico and the U. S. Virgin Islands - 1972-74. Pest. Monit. J., 9(-):39-43.
- 863 Renzoni, A. (1980) Shellfish and heavy metals in the Mediterranean. Thalassia Jugosl., 16(2-4):335-46.

- 864 **Rezende, C. E., and L. D. Lacerda (1986)** Metais pesados em mexilhões (*Perna perna* L.) no littoral do Estado do Rio de Janeiro. Rev. Biol. 46(-):239-47 (Portuguese).
- 865 **Ribera, D., J. F. Narbonne, P. Suteau, C. Raoux, P. Garrigues, and M. Lafaurie (1989)** Activities of PAH metabolizing system in the mussel as a biochemical indicator for pollution: French coasts of the Mediterranean Sea. Oceanis, 15(4):443-9.
- 866 **Rice, C. D., F. A. Espourteille, and R. J. Huggett (1987)** Analysis for tributyltin in estuarine sediments and oyster tissue. Appl. Organomet. Chem., 1(6):541-4.
- 867 **Riego, A. F. d. (1968)** Determinación del arsenico en los organismos marinos. Bol. Inst. Esp. Oceanogr., 134(-):-
- 868 **Riisgård, H. U. (1981)** Growth of *Mytilus edulis* in net bags transferred to different localities in a eutrophicated Danish fjord. Mar. Pollut. Bull., 12(8):272-6.
- 869 **Riisgard, H. V., E. Bjornestad, and F. Mohlenberg (1987)** Accumulation of cadmium in the mussel *Mytilus edulis*: kinetics and importance of uptake via food and sea water. Mar. Biol., 96(-):349-53.
- 870 **Riisgård, H. U., and S. Hansen (1990)** Biomagnification of mercury in a marine grazing food-chain: algal cells *Phaeodactylum tricornutum*, mussel *Mytilus edulis* and flounders *Platichthys flesus* studied by means of a stepwise-reduction-CVAA method. Mar. Ecol., 62(-):259-70.
- 871 **Riisgård, H. U., T. Kiørboe, F. Møhlenberg, I. Drabk, and P. Pheiffer Madsen (1985)** Accumulation, elimination and chemical speciation of mercury in the bivalves *Mytilus edulis* and *Macoma balthica*. Mar. Biol., 86(-):55-62.
- 872 **Riley, J. P., and S. Wahby (1977)** Concentrations of PCBs, dieldrin and DDT residues in marine animals from Liverpool Bay. Mar. Pollut. Bull., 8(-):9-11.
- 873 **Riley R. T. (1978)** The effects of chemical perturbation by naphthalene on glucose metabolism in the European flat oyster (*Ostrea edulis*): an in vivo kinetic analysis. Oregon State University, Corvallis, OR, 184 pp.
- 874 **Riley, R. T., and M. C. Mix (1981)** Effects of naphthalene on glucose metabolism in the European flat oyster *Ostrea edulis*. Comp. Biochem. Physiol., C70(1):13-20.
- 875 **Riley, R. T., M. C. Mix, R. L. Schaffer, and D. L. Bunting (1981)** Uptake and accumulation of naphthalene by the oyster *Ostrea edulis* in flow through system. Mar. Biol., 61(4):267-76.

- 876 Riley, R. T., M. A. Shirazi, and R. C. Swartz (1981) Transport of naphthalene in the oyster *Ostrea edulis*. Mar. Biol., 63(3):325-30.
- 877 Risebrough, R. W., B. W. De Lappe, and T. T. Schmidt (1976) Bioaccumulation factors of chlorinated hydrocarbons between mussels and sea water. Mar. Pollut. Bull., 7(12):225-8.
- 878 Risebrough R. W., B. W. De Lappe, E. F. Letterman, J. L. Lane, M. Firestone-Gillis, A. M. Springer, and W. Walker (1980) California mussel watch: 1977 - 1978. Vol. III. Organic pollutants in mussels, *Mytilus californianus* and *M. edulis* along the California coast. Water Quality Monitoring Rep. 79-22, SWRCB, Sacramento, CA.
- 879 Risebrough, R. W., B. W. D. Lappe, W. Walker, B. T. Simoneit, J. Grimalt, J. Albaiges, and J. A. Garcia Regueiro (1983) Application of the Mussel Watch concept in studies of the distribution of hydrocarbons in the coastal zone of the Ebro Delta. Mar. Pollut. Bull., 14(5):181-187.
- 880 Ritz, D. A., R. Swain, and N. G. Elliott (1982) Use of the mussel *Mytilus edulis planulatus* (Lamarck) in monitoring heavy metal levels in seawater. Aust. J. Mar. Freshwater Res., 33(3):491-506.
- 881 Reseau National d'Observation (1988) Surveillance du milieu marin. DERO-88.22-EL, IFREMER, Brest, France, 35 pp.
- 882 Reseau National d'Observation (1990) Surveillance du milieu marin. DEL/QM/SMB/128MJ/90, IFREMER, Brest, France, 32 pp.
- 883 Robert R., and E. His (1981) Action de l'acetate de tributyle-etain sur les oeufs et les larves de deux mollusques d'interet commercial: *Crassostrea gigas* (Thunberg) et *Mytilus galloprovincialis* (Lmk.). ICES-CM-1981/F:42, International Council for the Exploration of the Sea, Copenhagen, Denmark, 15 pp.
- 884 Robertson, A., B. W. Gottholm, D. D. Turgeon, and D. A. Wolfe (1991) A comparative study of contaminant levels in Long Island Sound. Estuaries, 14(3):290-8.
- 885 Roberts, D. (1972) The assimilation and chronic effects of sublethal concentrations of endosulfan on condition and spawning in the common mussel *Mytilus edulis*. Mar. Biol., 16(-):119-25.
- 886 Roberts, D. (1975) Differential uptake of endosulfan by the tissues of *Mytilus edulis*. Bull. Environ. Contam. Toxicol., 13(170-6):
- 887 Roberts, D. (1975) The effect of pesticides on byssus formation in the common mussel *Mytilus edulis*. Environ. Pollut., 8(4):241-54.

- 888 **Roberts, D.** (1976) Mussels and pollution. In: Marine Mussels: Their Ecology and Physiology, Bayne, B. L. (ed.), Cambridge University Press, 67-80.
- 889 **Roberts, M. H.** (1987) Bivalve mollusks *Crassostrea virginica* and *Mercenaria mercenaria*. Bull. Environ. Contam. Toxicol., 39(6):1012-9.
- 890 **Robinson, J., A. Richardson, A. N. Crabtree, J. C. Coulson, and C. R. Potts** (1967) Organochlorine residues in marine organisms. Nature, 214(5095):1307-11.
- 891 **Rodriguez Molíns, L.** (1957) Colorimetric determination of copper in the sea water and in *Mytilus edulis*. Bol. Inst. Esp. Oceanogr., -(86):1-11 (Chem. Abs., 53:7445d, 1959).
- 892 **Rodriguez Molíns, L., and J. R. Besada Rial** (1957) Chemical studies of *Mytilus edulis* of the Vigo estuary. Bol. Inst. Esp. Oceanogr., -(87):1-19 (Chem. Abs., 53:7445g, 1959).
- 893 **Roesijadi, G.** (1983) Enhanced mercury tolerance in *Mytilus edulis*; influence of Cu, Zn, and Cd pre-exposure and relationship to metal-binding proteins. In: Proc. Conf. European Soc. for Comparative Physiol. and Biochem. Taormina, Sicily, Italy, September 5, 1983. 1-4.
- 894 **Roesijadi G.** (1986) Metabolism and toxicity of trace metals by the mussel, *Mytilus edulis*. Final report. DOEER604101, Department of Energy, Washington, DC, 16 pp.
- 895 **Roesijadi G.** (1988) Metabolism and toxicity of trace metals in the marine mussel, *Mytilus edulis*: Progress report, July 1, 1987 - June 30, 1988. UMCEESCBL8891 (DOEER604693), Chesapeake Biological Lab., University of Maryland, Solomons, MD, 10 pp.
- 896 **Roesijadi, G., and G. W. Fellingham** (1987) Influence of copper, cadmium, and zinc pre-exposure on mercury toxicity in the mussel *Mytilus edulis*. Can. J. Fish. Aquat. Sci., 44(3):680-4.
- 897 **Roesijadi, G., J. S. Young, A. S. Drum, and J. M. Gurtisen** (1984) Behavior of trace metals in *Mytilus edulis* during a reciprocal transplant field experiment. Mar. Ecol., 18(1-2):155-170.
- 898 **Rogerson P. F.** (1988) Organic chemical waste characterization for marine disposal of Black Rock Harbor dredged materials. ASTM Spec. Tech Publ. 976, Chem. Biol. Charact. Munic. Sludges, Sediments, Dredge Spoils, Drill. Muds, 213-22, US Environmental Protection Agency, Narragansett, RI.

- 899 **Roosenberg, W. H.** (1969) Greening and copper accumulation in the American oyster, *Crassostrea virginica*, in the vicinity of a steam electric generating station. Ches. Sci., 10(241-55):
- 900 **Roper D. S., and R. D. Pridmore** (1989) The use of the Pacific oyster (*Crassostrea gigas*) for biomonitoring in Manukau Harbor. Consultancy Rep. 7099/2, Tech. Pub. 20, Auckland Regional Water Board, Auckland, New Zealand, 26 pp.
- 901 **Rosales, M. T. L., A. V. Botello, H. Bravo, and E. F. Mandelli** (1979) PCB's and organochlorine insecticides in oysters from coastal lagoons of the Gulf of Mexico, Mexico. Bull. Environ. Contam. Toxicol., 21(4-5):652-6.
- 902 **Rosas, I., A. Báez, and R. Belmont** (1983) Oyster *Crassostrea virginica* as indicator of heavy metal pollution in some lagoons of the Gulf of Mexico. Water, Air, Soil Pollut., 20(2):127-136.
- 903 **Rose, W. C., and M. Bodansky** (1920) Biochemical studies on marine organisms. I. The occurrence of copper. J. Biol. Chem., 44(-):99-112 (Chem. Abs., 14:3726, 1920).
- 904 **Rowe, D. R., L. W. Canter, and J. W. Mason** (1970) Contamination of oysters by pesticides. J. Sanit. Eng. Div., Proc. Amer. Soc. Civil Eng., 96(5A5):1221-34.
- 905 **Rowe, D. R., L. W. Canter, P. J. Snyder, and J. W. Mason** (1971) Dieldrin and endrin concentrations in a Louisiana estuary. Pest. Monit. J., 4(-):177-83.
- 906 **Rubinstein, N. I., R. J. Pruell, B. K. Taplin, J. A. Livolsi, and C. B. Norwood** (1990) Bioavailability of 2,3,7,8-TCDD, 2,3,7,8-TCDF and PCBs to marine benthos from Passaic river sediments. Chemosphere, 20(7-9): 1097-1102.
- 907 **Rucker, J. B., and J. W. Valentine** (1961) Salinity response of trace element concentration in *Crassostrea virginica*. Nature, 190(-):1099-100.
- 908 **Ruddell, C. L., and D. W. Rains** (1975) The relationship between zinc, copper and the basophils of two crassostreid oysters, *Crassostrea gigas* and *Crassostrea virginica*. Comp. Biochem. Physiol., 51A(-):565-91.
- 909 **Ryder, J. A.** (1882) Notes on the breeding, food, and green color of the oyster. Bull., U. S. Fish Comm. 1881, 1(-):403-19.
- 910 **Sabourin, T. D., and R. E. Tullis** (1981) Effect of three aromatic hydrocarbons on respiration and heart rates of the mussel, *Mytilus californianus*. Bull. Environ. Contam. Toxicol., 26(6):729-36.

- 911 **Salazar M. H., and S. M. Salazar** (1989) Acute effects of (bis)tributyltin oxide on marine organisms. Summary of work performed 1981 to 1983. NTIS AD-A214 0051/1/GAR, Tech. Rep., US Nav. Ocean Syst. Ctr., San Diego, CA.
- 912 **Salazar S. M., M. H. Salazar, B. M. Davidson, P. M. Stang, and K. Meyers-Schulte** (1987) Portable environment test system: a field assessment of organotin leachates - test and evaluation. Final report. May - Dec. 1986. NOSCTR1202, US Naval Ocean Systems Center, San Diego, CA, 36 pp.
- 913 **Salihoglu, I., J. Faganelli, and J. Stirn** (1980) Chlorinated hydrocarbons, pesticides and polychlorinated biphenyls in some marine organisms and sediments in an experimentally polluted ecosystem in the lagoon of Strunjan, north Adriatic and its surroundings. Rev. Int. Océanogr. Méd., 58(-):3-9.
- 914 **Samant, H. S., K. G. Doe, and O. C. Vaidya** (1990) An integrated chemical and biological study of the bioavailability of metals in sediments from two contaminated harbours in New Brunswick, Canada. Sci. Total Environ., 96(3):253-68.
- 915 **Sanders, J. G., G. R. Abbe, and G. F. Riedel** (1990) Silver uptake and subsequent effects on growth and species composition in an estuarine community. Sci. Total Environ., 97/98(-):761-9.
- 916 **Sanders, M.** (1984) Metals in crab, oyster and sediment in two South Carolina estuaries. Mar. Pollut. Bull., 15(4):159-61.
- 917 **Santa Maria, I., M. Gonzalez, W. Lara, and A. Ober** (1986) Arsenic levels in Chilean marine species. Bull. Environ. Contam. Toxicol., 37(4):593-8.
- 918 **Sastry, V. N., and Y. M. Bhatt** (1965) Zinc content of some marine bivalves and barnacles from Bombay shores. J. Ind. Chem. Soc., 42(2): 121-2.
- 919 **Satsmadjis, J., and G. P. Gabrielides** (1983) Organochlorines in mussels and shrimp from the Saronikos Gulf (Greece). Mar. Pollut. Bull., 14(9): 356-8.
- 920 **Satsmadjis, J., and F. Voutsinou-Taliadouri** (1983) *Mytilus galloprovincialis* and *Parapenaeus longirostris* as bioindicators of heavy metal and organochlorine pollution. Mar. Biol., 76(2):115-124.
- 921 **Sautet, J., H. Ollivier, and J. Quicke** (1961) Biological fixation of arsenic on *Mytilus edulis*. Ann. Med. Legale. Criminol., 41(Criminol. Police Sci. Toxicol.):602-6.

- 922 **Sautet, J., H. Ollivier, and J. Quicke** (1964) Fixation and biological secretion of arsenic by *Mytilus edulis*. II. Ann. Med. Legale, Criminol., 44(Criminol. Police Sci. Toxicol.):466-71.
- 923 **Scammel, M. S., G. E. Batley, and C. I. Brockbank** (1991) A field study of the impact on oysters of tributyltin introduction and removal in a pristine lake. Arch. Environ. Contam. Toxicol., 20(2):276-81.
- 924 **Schantz M. M., S. N. Chesler, B. J. Koster, and S. A. Wise** (1988) Analytical methods for the determination of organic contaminants in marine sediments and tissues. Specimen Banking, NBS Spec. Publ. 740, 40-52, National Bureau of Standards, Gaithersburg, MD.
- 925 **Schantz, M. M., B. Koster, and S. A. Wise** (1990) Analysis of marine tissue and sediment samples for the determination of PCBs and chlorinated pesticides. Abstracts, ACS, 200(1-2):42. 200th ACS National Meeting, August 26-31, 1990, Gaithersburg, MD.
- 926 **Schnier, C., L. Karbe, and R. Niedergesass** (1984) Trace elements in mussels and sediment from the German Bight (North Sea). A comparison of multielement patterns. In: Proc., 5th Int. Conf. Nucl. Methods Environ. Energy Res., Vogt, J. R. (ed.), NTIS, Springfield, VA, 502-14.
- 927 **Schramel, P., and L. Xu** (1991) Determination of arsenic, antimony, bismuth, selenium and tin in biological samples by continuous flow hydride generation inductively coupled plasma-atomic emission spectrometry (ICP-AES) without gas-liquid separator. Fresenius J. Anal. Chem., 340(1):41-7.
- 928 **Schroeder, H. A., and J. J. Balassa** (1966) Abnormal trace metals in man: arsenic. J. Chron. Dis., 19(-):85-106.
- 929 **Schroeder, H. A., D. V. Frost, and J. J. Balassa** (1970) Essential trace metals in man: selenium. J. Chron. Dis., 23(-):227-43.
- 930 **Schulz-Baldes, M.** (1973) Die Miesmuschel *Mytilus edulis* als Indikator für die Bleikonzentration im Weserästuar und in der Deutschen Bucht. Mar. Biol., 21(-):98-102 (German).
- 931 **Schulz-Baldes, M.** (1974) Lead uptake from sea water and food and lead loss in the common mussel *Mytilus edulis*. Mar. Biol., 25(-):177-93.
- 932 **Scott, D. M., and C. W. Major** (1972) The effect of copper (II) on survival, respiration and heart rate in the common blue mussel, *Mytilus edulis*. Biol. Bull. Mar., 143(-):679-88.
- 933 **Scott, G. I., and D. R. Lawrence** (1982) The American oyster as a coastal zone pollution monitor: a pilot study. Estuaries, 5(1):40-6.

- 934 **Segar, D. A., J. D. Collins, and J. P. Riley** (1971) The distribution of the major and some minor elements in marine animals. Part II. Molluscs. J. Mar. Biol. Assoc. U. K., 51(1):131-6.
- 935 **Sericano, J. L., E. L. Atlas, T. L. Wade, and J. M. Brooks** (1990) NOAA's Status and Trends Mussel Watch Program: chlorinated pesticides and PCBs in oysters (*Crassostrea virginica*) and sediments from the Gulf of Mexico 1986-1987. Mar. Environ. Res., 29(3):161-204.
- 936 **Sericano, J. L., T. L. Wade, E. L. Atlas, and J. M. Brooks** (1990) Historical perspective on the environmental bioavailability of DDT and its derivatives to Gulf of Mexico oysters. Environ. Sci. Technol., 24(10):1541-8.
- 937 **Severy, H. W.** (1923) The occurrence of copper and zinc in certain marine animals. J. Biol. Chem., 55(-):79.
- 938 **Shaw, D. G., T. E. Hogan, and D. J. McIntosh** (1986) Hydrocarbons in bivalve mollusks of Port Valdez, Alaska: consequences of five years permitted discharge. Est. Coastal Shelf Sci., 23(6):863-72.
- 939 **Shaw, G. R. ,, and D. W. Connell** (1980) Polychlorinated biphenyls in the Brisbane River estuary, Australia. Mar. Pollut. Bull., 11(12): 356-8.
- 940 **Sheppard, C. R. C., and D. J. Bellamy** (1974) Pollution of the Mediterranean around Naples. Mar. Pollut. Bull., 5(-):42-4.
- 941 **Shiber, J. G.** (1980) Trace metals with seasonal considerations in coastal algae and mollusks from Beirut, Lebanon. Hydrobiol., 69(1-2):147-162.
- 942 **Shiber, J. G., and T. A. Shatila** (1978) Lead, cadmium, copper, nickel and iron in limpets, mussels and snails from the coast of Ras Beirut, Lebanon. Mar. Environ. Res., 1(-):125-34.
- 943 **Shigenaka G., and G. G. Lauenstein** (1988) National Status and Trends Program for Marine Environmental Quality: Benthic Surveillance and Mussel Watch Projects sampling protocols. Tech. Memo. NOS OMA 40, NOAA/NOS/Coastal and Estaurine Assessment Branch, Rockville, MD, 12 pp.
- 944 **Shimizu, M., and S. Tsuji** (1980) Heavy metal content of the common mussel, *Mytilus edulis*, and its variation. In: Manage. Environ., Patel, B. (ed.), Wiley East Ltd., New Delhi, India, 409-16.
- 945 **Shirazi, M. A., R. C. Swartz, and R. T. Riley** (1981) Transport of naphthalene in the oyster *Ostrea edulis*. Mar. Biol., 63(3):325-30.

- 946 **Short, J. W., and J. L. Sharp** (1989) Tributyltin in bay mussels (*Mytilus edulis*) of the Pacific Coast of the United States. Environ. Sci. Technol., 23(6):740-3.
- 947 **Shuster, C. N., and B. H. Pringle** (1969) Trace metal accumulation by the American oyster, *Crassostrea virginica*. Proc. Natl. Shellfish Assoc., 59(-):91-102.
- 948 **Sibbald, R. R., A. D. Connell, A. C. Butler, P. Naidoo, and J. D. Dunn** (1986) A limited collaborative investigation of the occurrence of dieldrin in selected biota in the Durban area. S. Afr. J. Sci., 82(6):319-2.
- 949 **Simpson, R. D.** (1979) Uptake and loss of zinc and lead by mussels (*Mytilus edulis*) and relationships with body weight and reproductive cycle. Mar. Pollut. Bull., 10(3):74-8.
- 950 **Simpson, R. E., W. Horwitz, and C. A. Roy** (1974) Surveys of mercury levels in fish and other foods. Pest. Monit. J., 7(-):127-38.
- 951 **Sinkkonen, S.** (1982) Appearance and structure analysis of aromatic oil residues in Baltic mussel and fish. Toxicol. Environ. Chem., 5(3-4): 217-25.
- 952 **Sivalingam, P. M., H. Schwenke, and J. Knoth** (1983) Mussel byssus as biomonitors of heavy metals. J. Singapore Natl. Acad. Sci., 10-12(-):34-7.
- 953 **Sivalingam, P. M., T. Yoshida, H. Kojima, and I. Allapitchay** (1980) Trace metals biodeposition and its extent of pollution in coastal molluscs, sediments and sea water samples from the Island of Penang, Malaysia. In: Proc., 4th Symp. Co-op. Study Kuroshio Adjacent Reg. Saikon Publ. Co., Ltd., Tokyo, Japan. 532-44.
- 954 **Skul'sky, I. A., I. V. Burovina, V. F. Vasilyeva, O. N. Lukyanova, V. A. Nikiforov, and I. G. Syasina** (1989) Uptake and microlocalization of cadmium in marine bivalve mollusc tissues. Comp. Physiol., 92C(2):349-53.
- 955 **Smith, D. R., M. D. Stephenson, and A. R. Flegal** (1986) Trace metals in mussels transplanted to San Francisco Bay. Environ. Toxicol. Chem., 5(2):129-38.
- 956 **Smith, J. R.** (1985) Copper exposure and ciliary function in gill tissue in *Mytilus californianus*. Bull. Environ. Contamin. Toxicol., 35(-):556-63.
- 957 **Smith, J. D., E. C. V. Butler, G. W. Little, P. J. Milne, B. R. Grant, and N. Millis** (1981) Distribution and significance of copper, lead, zinc and cadmium in the Corio Bay ecosystem. Aust. J. Mar. Freshwater Res., 32(2): 151-64.

- 958 Solbakken, J. E., A. H. Knap, and Orr. P. L. (1985) Uptake and elimination of phthalate ester in tropical corals and mussels. Mar. Environ. Res., 16(2):103-14.
- 959 Solbakken, J. E., A. H. Knap, C. E. Searle, and K. H. Palmork (1983) Uptake and elimination of (9-14C)phenanthrene in the turkey wing mussel (*Arca zebra*). Bull. Environ. Contam. Toxicol., 30(4):420-3.
- 960 Soler, M., J. O. Grimalt, J. Albaiges, J. Mendez, and M. Marino (1989) Distribution of aliphatic aromatic and chlorinated hydrocarbons in mussels from the Spanish Atlantic coast, Galicia. An assessment of pollution parameters. Chemosphere, 19(10-11):1489-98.
- 961 Southgate, T., D. J. Slinn, and J. F. Eastham (1983) Mine-derived metal pollution in the Isle of Man. Mar. Pollut. Bull., 14(4):137-40.
- 962 Sprague, J. B., and J. R. Duffy (1971) DDT residues in Canadian Atlantic fishes and shellfishes in 1967. J. Fish. Res. Bd. Can., 28(1): 59-64.
- 963 Stainken, D., and J. Rollwagen (1979) PCB residues in bivalves and sediments of Raritan Bay. Bull. Environ. Contam. Toxicol., 23(4-5):690-7.
- 964 Stancher, B., and M. Chimenti (1970) Mollusks of the upper Adriatic Sea. Metal content of some gastropods and lamellibranchs. Rass. Chim., 22(3): 78-83.
- 965 Stebbing, A. R. D. (1985) Organotins and water quality - some lessons to be learned. Mar. Pollut. Bull., 16(10):383-90.
- 966 Stegeman, J. J. (1985) Benzo[a]pyrene oxidation and microsomal enzyme activity in the mussel (*Mytilus edulis*) and other bivalve mollusk species from the western North Atlantic. Mar. Biol., 89(1):21-30.
- 967 Stegeman, J. J., and J. M. Teal (1973) Accumulation, release and retention of petroleum hydrocarbons by the oyster *Crassostrea virginica*. Mar. Biol., 22(-):37-44.
- 968 Stegnar, P., I. Vukadin, B. Smodis, A. Vakselj, and A. Prosenec (1981) Trace elements in sediments and organisms from Kastela Bay (Yugoslavia). Journ. Etud. Pollut. Mar. Mediterr., 5(-):595-600.
- 969 Steinhauer, W. G., C. Peven, and P. D. Boehm (1989) The evolution of PCB analyses for the NOAA Mussel Watch Program and overview of PCB levels in bivalves from 1989 Mussel Watch field season. J. Shellfish. Res., 8(2):453.

- 970 Stenner, R. D., and G. Nickless (1974) Distribution of some heavy metals in organisms in Hardangerfjord and Skjerstadsfjord, Norway. Water Air Soil Pollut., 3(-):279-91.
- 971 Stenner, R. D., and G. Nickless (1975) Heavy metals in organisms of the Atlantic coast of S. W. Spain and Portugal. Mar. Pollut. Bull., 6(-): 89-92.
- 972 Stephenson M. D., S. L. Coale, M. Martin, and J. H. Martin (1980) California mussel watch: 1979 - 1980 - Trace metals concentrations in the California mussel, *Mytilus californianus*, and the bay mussel, *M. edulis*, along the California coast and selected harbors and bays. Part I. Water Quality Monitoring Rep. 80-8, SWRCB, Sacramento, CA.
- 973 Stephenson M. D., S. L. Coale, M. Martin, D. Smith, E. Armhurst, E. Faurot, B. Allen, L. Cutter, G. Ichikawa, J. Goetzi, and J. H. Martin (1982) California mussel watch: 1980 - 1981. Part II. Trace metal concentrations in the California mussel, *Mytilus californianus*, from California's coast, bays and estuaries. Water Quality Monitoring Rep. 81-11TS, SWRCB, Sacramento, CA.
- 974 Stephenson M. D., M. Martin, S. E. Lange, A. R. Flegal, and J. H. Martin (1979) California mussel watch: 1977 - 1978. Vol. II. Trace metals in the California mussel, *Mytilus californianus*. Water Quality Monitoring Rep. 79-22, SWRCB, Sacramento, CA.
- 975 Stephenson, M. D., D. R. Smith, J. Goetzi, G. Ichikawa, and M. Martin (1986) Growth abnormalities in mussels and oysters from areas with high levels of tributyltin in San Diego Bay. In: Organotin Symposium (at) Oceans '86. Washington, D.C., September 23-5, 1986. IEEE Publishing Serv., New York, NY. 1246-51.
- 976 Stoeppler M., F. Backhaus, M. Burow, K. May, and C. Mohl (1988) Comparative investigations on trace metal levels in brown algae and common (blue) mussels at the same location in the Baltic Sea and the North Sea. NBS Special Publ. 740, Prog. Environ. Speciment Banking, National Institute of Standards and Technology, Gaithersburg, MD, 53 - 61.
- 977 Stoeppler, M., C. Mohl, and H. W. Nurnberg (1981) Total arsenic in seawater and marine organisms. Journ. Etud. Pollut. Mar. Mediterr., 5(-): 281-3.
- 978 Strohal, P., and M. Dzajo (1971) Concentration of mercury in the North Adriatic biota. Thalassia Jugosl., 7(-):591-6.
- 979 Strömngren, T. (1982) Effect of heavy metals (Zn, Hg, Cu, Cd, Pb, Ni) on the length growth of *Mytilus edulis*. Mar. Biol., 72(1):69-72.

- 980 **Strømgren, T., and T. Bongard** (1987) The effect of tributyltin oxide on growth of *Mytilus edulis*. Mar. Pollut. Bull., 18(1):30-1.
- 981 **Stump, I. G., J. Kearney, J. M. D'Auria, and J. D. Popham** (1979) Monitoring trace elements in the mussel *Mytilus edulis* using x-ray energy spectroscopy. Mar. Pollut. Bull., 10(9):270-274.
- 982 **Sturesson, U.** (1978) Cadmium enrichment in shells of *Mytilus edulis*. Ambio, 7(3):122-5.
- 983 **Sturesson, U.** (1976) Lead enrichment in shells of *Mytilus edulis*. Ambio, 5(-):253-6.
- 984 **Suarez Vidal, C. E., and M. J. Acosta Ruiz** (1976) Distribución de las concentraciones de DDT en mejillón *Mytilus californianus* en la parte noroccidental de la Baja California. Cienc. Mar., 3(2):1-7 (Spanish).
- 985 **Suess, M. J.** (1972) Polynuclear aromatic hydrocarbon pollution of the marine environment. In: Marine Pollution and Sea Life. Rome, Italy, 1970. Fishing News (Books) Ltd., London. 568-70.
- 986 **Sumner, C. E.** (1978) Chlorinated hydrocarbon pesticide residues in Pacific oysters *Crassostrea gigas* from Tasmania, Australia 1973. Pest. Monit. J., 12(2):87-90.
- 987 **Sunila, I.** (1988) Acute histological responses of the gill of the mussel *Mytilus edulis* to exposure by environmental pollutants. J. Invertebr. Pathol., 52(1):137-41.
- 988 **Sunila, I.** (1981) Toxicity of copper and cadmium to *Mytilus edulis* L. (Bivalvia) in brackish water. Ann. Zool. Fennici, 18(-):213-23.
- 989 **Sunila, I., and Lindström. R.** (1985) The structure of the interfilamentary junction of the mussel (*Mytilus edulis* L.) gill and its uncoupling by copper and cadmium exposures. Comp. Biochem. Physiol., 81C(2):267-72.
- 990 **Suteau, P. M., M. L. Migaud, and J. F. Narbonne** (1987) Absorption and tissue distribution of radioactivity in mussels (*Mytilus galloprovincialis*) exposed to low concentrations of carbon-14-polychlorinated biphenyl. Sci. Total Environ., 67(2-3):187-93.
- 991 **Suzuki, K.** (1960) Mineral metabolism. III. Copper and iron metals in adults and iron resorption from liver and oysters. Eiyogaku Zasshi, 18(-):255-60.
- 992 **Suzuki, T., and N. Mizuno** (1955) Biochemical studies on the formation of pearl. I. Content of zinc in a pearl oyster. Seikagaku, 27(-):101-3.

- 993 Swinehart, J. H., and M. A. Cheney (1987) Interactions of organic pollutants with gills of the bivalve mollusks *Anodonta californiensis* and *Mytilus californianus*: uptake and effect on membrane fluxes. II. Comp. Biochem. Physiol., 88C(2):293-9.
- 994 Szafer, P., and Szefer. K. (1985) Occurrence of ten metals in *Mytilus edulis* L. and *Cardium glaucum* L. from the Gdansk Bay. Mar. Pollut. Bull., 16(11):446-50.
- 995 Szefer, P. (1990) Interelemental relationships in organisms and bottom sediments of the southern Baltic. Sci. Total Environ., 95(-):119-30.
- 996 Talbot, V. (1985) Heavy metal concentrations in oysters *Saccostrea cucullata* and *Saccostrea* sp. (probably *S. commercialis*) from the Dampier Archipelago, Western Australia. Aust. J. Mar. Freshwater Res., 36(2):169-75.
- 997 Talbot, V. (1983) Lead and other trace metals in the sediments and selected biota of Princess Royal Harbour, Albany, Western Australia. Environ. Pollut. (Ser. B), 5(1):35-49.
- 998 Talbot, V. (1985) Relationship between cadmium concentrations in seawater and those in the mussel *Mytilus edulis*. Mar. Biol., 85(-):51-4.
- 999 Talbot, V. (1987) Relationship between lead concentrations in seawater and in the mussel *Mytilus edulis*: A water-quality criterion. Mar. Biol., 94(4):557-60.
- 1000 Talbot, V. (1986) Seasonal variation of copper and zinc concentrations in the oyster *Crassostrea cucullata* from the Dampier Archipelago, Western Australia: implications for pollution monitoring. Sci. Total Environ., 57(-):217-30.
- 1001 Talbot, V., and W. - J. Chang (1987) Rapid multielement analysis of oyster and cockle tissue using x-ray fluorescence spectrometry, with applications to reconnaissance marine pollution investigations. Sci. Total Environ., 66(-):213-23.
- 1002 Talbot, V., and A. Chegwidan (1982) Cadmium and other heavy metal concentrations in selected biota from Cockburn Sound, Western Australia. Aust. J. Mar. Freshwater Res., 33(5):779-88.
- 1003 Talbot, V., R. Magee, and M. Hussain (1976) Cadmium in Port Phillip Bay mussels. Mar. Pollut. Bull., 7(5):84-6.
- 1004 Talbot, V., and R. J. Magee (1977) Cadmium and lead in Port Phillip Bay mussels. Water, 4(2):8-11.

- 1005 Talbot, V., R. Magee, and M. Hussain (1976) Lead in Port Phillip Bay mussels. Mar. Pollut. Bull., 7(-):234-7.
- 1006 Tan, W. H., and L. H. Lim (1984) The tolerance to and uptake of lead in the green mussel, *Perna viridis* (L.). Aquaculture, 42(-):317-32.
- 1007 Tanabe, S., N. Kannan, M. Fukushima, T. Okamoto, T. Wakimoto, and R. Tatsukawa (1989) Persistent organochlorines in Japanese coastal waters: an introspective summary from a Far East developed nation. Mar. Pollut. Bull., 20(7):344-52.
- 1008 Tanabe, S., R. Tatsukawa, and D. J. H. Phillips (1987) Mussels as bioindicators of PCB pollution: a case study of uptake and release of PCB isomers and congeners in green-lipped mussels (*Perna viridis*) in Hong Kong waters. Environ. Pollut., 47(1):41-62.
- 1009 Tanita, R., J. M. Johnson, M. Chun, and J. Maciolek (1976) Organochlorine pesticides in the Hawaii Kai Marina. Pest. Monit. J., 10(-): 24-9.
- 1010 Taranaki Catchment Board (1989) Water Right Impact Monitoring. North Taranaki District Council Marine Outfall Trace Metals Monitoring Programme. Tech. Rep. 89-7 (ISSN 0112-0425), Taranaki Catchment Commission, Stratford, New Zealand, 83 pp.
- 1011 Teichman, J., A. Bevenue, and J. W. Hylin (1978) Separation of polychlorobiphenyls from chlorinated pesticides in sediment and oyster samples for analysis by gas chromatography. J. Chromatogr., 151(2): 155-61.
- 1012 Ten Berge, W. F., and M. Hillebrand (1974) Organochlorine compounds in several marine organisms from the North Sea and the Dutch Wadden Sea. Neth. J. Sea Res., 8(4):361-8.
- 1013 Thain J. E. (1983) The acute toxicity of bis(tributyl tin) oxide to the adults and larvae of some marine organisms. ICES-CM-1983/E:13, International Council for the Exploration of the Sea, Copenhagen, Denmark, 5 pp.
- 1014 Thain J. E., and M. J. Waldock (1983) The effect of suspended sediment and bis(tributyl tin) oxide on the growth of *Crassostrea gigas* spat. ICES-CM-1983/E:10, International Council for the Exploration of the Sea, Copenhagen, Denmark, 11 pp.
- 1015 Thain J. E., M. J. Waldock, and M. Helm (1986) The effect of tributyltin on the reproduction of the oyster *Ostrea edulis*. ICES-CM-1986/E:14, International Council for the Exploration of the Sea, Copenhagen, Denmark, 8 pp.

- 1016 Theede, H., I. Andersson, and W. Lehnberg (1979) Cadmium in *Mytilus edulis* from German coastal waters. Meeresforsch. Rep. Mar. Res., 27(3): 147-55.
- 1017 Theede, H., I. Andersson, and W. Lehnberg (1979) Cadmium in *Mytilus edulis* from German coastal waters. Ber. dt. Wiss. Komm. Meeresforsch., 27(-):247-55.
- 1018 Thibaud, Y., B. Boutier, D. Claisse, D. Auger, and J. Noel (1988) Surveillance dans la matière vivante. La surveillance du mercure et du cadmium dans les huîtres et les moules du littoral français de 1979 a 1985. Dix Années de Surveillance 1974 - 1984. Mercure et Cadmium, IV, Réseau National d'Observation de la Qualité du Milieu Marin, IFREMER, Plouzané, France, 55-100 (French).
- 1019 Thibaud, Y., and D. Cossa (1989) An international intercalibration for methylmercury in biological tissue. Appl. Organomet. Chem., 3(-):257-66.
- 1020 Thomson, J. D. (1982) Metal concentration changes in growing Pacific oysters, *Crassostrea gigas*, cultivated in Tasmania, Australia. Mar. Biol., 67(2):135-42.
- 1021 Thomson, J. D. (1983) Short-term changes in metal concentration in the cultivated Pacific Oyster, *Crassostrea gigas* Thunberg, and the implications for food standards. Aust. J. Mar. Freshwater Res., 34(3):397-405.
- 1022 Thomson, J. D., B. J. S. Pirie, and S. G. George (1985) Cellular metal distribution in the Pacific oyster, *Crassostrea gigas* (Thun.) determined by quantitative x-ray microprobe analysis. J. Exp. Mar. Biol. Ecol., 85(1):37-45.
- 1023 Thornton, I., H. Walling, and A. Darracott (1975) Geochemical studies in several rivers and estuaries used for oyster rearing. Sci. Total Environ., 4(-):325-45.
- 1024 Thrower, S. J., and I. J. Eustace (1973) Heavy metal accumulation in oysters grown in Tasmanian waters. Food Tech. Aust., 25(11):546-53.
- 1025 Thrower, S. J., and I. J. Eustace (1973) Heavy metals in Tasmanian oysters in the winter of 1972. Aust. Fish., 32(10):7-10.
- 1026 Tiller, R. E., and E. N. Cory (1947) Effect of DDT on some tidewater aquatic animals. J. Econ. Entomol., 40(-):431-3.
- 1027 Topping G. (1972) Heavy metals in shellfish from Scottish waters. ICES-CM-1972/E:21, International Council for the Exploration of the Sea, Copenhagen, Denmark, 7 pp.

- 1028 **Topping, G.** (1973) Heavy metals in shellfish from Scottish waters. Aquaculture, 1(-):379-84.
- 1029 **Torre, J. A., and C. Masso** (1975) El contenido en mercurio de los moluscos en la Ría de Pontevedra como medida de su grado de contaminación en dicho metal. Bol. Inst. Esp. Oceanogr., 191(-):1-10 (Spanish).
- 1030 **Tsuda, T., H. Nakanishi, T. Morita, and J. Takebayashi** (1986) Simultaneous gas chromatographic determination of dibutyltin and tributyltin compounds in biological and sediment samples. J. Assoc. Off. Anal. Chem., 69(6):981-4.
- 1031 **Tuinstra L. G. M., and P. Hagel** (1972) Chlorinated aromatic hydrocarbon content of fishes, mussels and shrimps in the North Sea. Rep. 2nd ser. no. 95E, Government Dairy Station, Leiden, Netherlands, 13 pp.
- 1032 **Turgeon, D. D., and G. G. Lauenstein** (1991) Contaminants in mussel tissues from U. S. coastal waters. Coastal Zone '91. San Diego, CA, 1842-58.
- 1033 **Turgeon, D. D., and G. G. Lauenstein** (1990) National Status and Trends Program: contaminants in blue mussel tissues from northeastern United States coastal waters. Abstracts, 56th Annual Mtg. Woods Hole, Massachusetts, June 3 - 8, 1990. 62.
- 1034 **Turgeon, D. D., and T. P. O'Connor** (1991) Long Island Sound: distributions, trends, and effects of chemical contamination. Estuaries, 14(3):279-89.
- 1035 **Tusek-Znidaric, M., M. Skreblin, J. Pavicic, A. Suhar, and P. Stegnar** (1985) Cellular distribution of Hg in selected organs of the marine mussel *Mytilus galloprovincialis*. In: Heavy Metals in the Environment (International Conf.). Vol. I. Athens, Greece, September, 1985. CEP Consultants Ltd., Edinburgh, UK. 730-2.
- 1036 **Uchida, M.** (1963) Biochemical studies on Minamata disease. Seikagaku, 35(-):430-9.
- 1037 **Uhler, A. D., T. H. Coogan, K. S. Davis, G. S. Durell, W. G. Steinhauer, S. De Freitas, and P. D. Boehm** (1989) Findings of tributyltin dibutyltin and monobutyltin in bivalves from selected U. S. coastal waters. Environ. Toxicol. Chem., 8(11):971-80.
- 1038 **Uhler, A. D., D. S. Durell, and W. G. Steinhauer** (1989) Findings of tributyltins in east and west coast USA bivalves 1988-1989. J. Shellfish Res., 8(2):453.
- 1039 **United Nations Environment Programme** (1989) State of the Mediterranean marine environment. MAP Tech. Rep. 28, UNEP, Athens, Greece, 225 pp.

- 1040 Ünlü, M. Y., and S. W. Fowler (1979) Factors affecting the flux of arsenic through the mussel *Mytilus galloprovincialis*. Mar. Biol., 51(3):209-19.
- 1041 Ünsal, M. (1984) Accumulation and loss of tin by the mussel. Oceanol. A., 7(-):493-8.
- 1042 Uthe J. F., and C. L. Chou (1986) The effects of prolonged starvation on concentrations and tissue burdens of a number of divalent trace metals in mussels (*Mytilus edulis*). ICES-CM-1986/E:28, International Council for the Exploration of the Sea, Copenhagen, Denmark, 4 pp.
- 1043 Vale C., A. M. Ferreira, C. Cortesão, M. C. Barros, O. G. Castro, and R. Mendes (1985) A mussel watch in the Portuguese coast, 1984. CM 1985/E:18, ICES, 19 pp.
- 1044 Valerio, F., and N. D'Ambrosio (1990) Mussels as bioindicators of PAH pollution in the marine environment. In: Carcinogenic, mutagenic, and teratogenic marine pollutants: impact on human health and the environment, Published on behalf of the World Health Organization Regional Office for Europe and United Nations Environment Programme. Advances in Applied Biotechnology series, vol. 5. Gulf Publ. Co., Houston, TX, 95-100.
- 1045 Valiela, I., M. D. Banus, and J. M. Teal (1974) Response of salt marsh bivalves to enrichment with metal-containing sewage sludge and retention of lead, zinc and cadmium by marsh sediments. Environ. Pollut., 7(-):149-57.
- 1046 Valkirs A., B. Davidson, and P. Seligman (1985) Sublethal growth effects and mortality to marine bivalves and fish from long-term exposure to tributyltin. Interim report. April - June 1984. NOSCTR1042, US Naval Ocean Systems Center, San Diego, CA, 67 pp.
- 1047 Valkirs, A. O., B. M. Davidson, and P. F. Seligman (1987) Sublethal growth effects and mortality to marine bivalves from long-term exposure to tributyltin. Chemosphere, 16(1):201-20.
- 1048 Van As, D., H. O. Fourie, and C. M. Vleggaar (1975) Trace element concentrations in marine organisms from the Cape West Coast. S. Afr. J. Sci., 71(-):151-4.
- 1049 Van Haren, R. J. F., J. Van Der Meer, and M. B. De Vries (1990) Cadmium and copper accumulation in the common mussel *Mytilus edulis* in the western Scheldt estuary: a model approach. Hydrobiol., 195(-): 105-18.
- 1050 Van Weers, A. W., and J. G. Van Raaphorts (1980) Accumulation of trace metals in coastal marine organisms. In: Proc., 3rd NEA Semin. Mar. Radioecol. 1979. OECD, Paris, France. 303-11.

- 1051 **Vasilikiotis, G., K. Fytianos, and A. Zotou** (1983) Heavy metals in marine organisms of the North Aegean Sea, Greece. Journ. Etud. Pollut. Mar. Mediterr., 6(-):303-6.
- 1052 **Veldhuizen-Tsoerkan, M. B., D. A. Holwerda, and D. I. Zandee** (1991) Anoxic survival time and metabolic parameters as stress indices in sea mussels exposed to cadmium or polychlorinated biphenyls. Arch. Environ. Contam. Toxicol., 20(2):259-65.
- 1053 **Veldhuizen-Tsoerkan, M. B., D. A. Holwerda, C. A. van der Mast, and D. I. Zandee** (1990) Effect of cadmium on protein synthesis in gill tissue of the sea mussel *Mytilus edulis*. In: Biomarkers of Environmental Contamination, McCarthy, J. F., Shugart, L. R. (eds.), Lewis Publishers (CRC Press, Inc.), Boca Raton, FL, 289-306.
- 1054 **Veldhuizen-Tsoerkan, M. B., D. A. Holwerda, and D. I. Zandee** (1991) Erratum {Anoxic survival time and metabolic parameters as stress indices in sea mussels exposed to cadmium or polychlorinated biphenyls, Arch. Environ. Contam. Toxicol., 1991, 20(2):259-65}. Arch. Environ. Contam. Toxicol., 20(3):448.
- 1055 **Venkataraman, R., and S. T. Chari** (1951) Oysters and clams. Biochemical variations. Ind. J. Med. Res., 39(-):533-41.
- 1056 **Vilela, H.** (1965) Exploração e salubridade de moluscos testaceos marinhos em 1964. Boletim da Pesca, 86(-):23-45 (Portuguese).
- 1057 **Vilela, H.** (1966) Exploração e salubridade de moluscos testaceos marinhos, 1965. Boletim da Pesca, 90(-):11-42 (Portuguese).
- 1058 **Vilela, H.** (1967) Exploração e salubridade de moluscos testaceos marinhos em 1966. Boletim da Pesca, 95(-):23-71 (Portuguese).
- 1059 **Vilela H.** (1975) A respeito de ostras. Biologia - exploração - salubridade. *Crassostrea angulata* (Lamark) em especial. Notas e Estudos da SEP 1, Série Recursos e Ambiente Aquáticos, 220 pp.
- 1060 **Vinogradov, A. P.** (1953) The Elementary Chemical Composition of Marine Organisms. Memoir Number II. Sears Foundation for Marine Research, Yale University, New Haven, CT.
- 1061 **Vos, G., J. P. C. Hovens, and P. Hagel** (1986) Chromium, nickel, copper, zinc, arsenic, selenium, cadmium, mercury and lead in Dutch fishery products 1977-1984. Sci. Total Environ., 52(1-2):25-40.
- 1062 **Voulgaropoulos, A., V. Simeonov, K. Fytianos, and G. Vasilikiotis** (1986) Cluster analysis approach to study heavy metals distribution in marine organisms. Fresenius Z. Anal. Chem., 325(5):477-8.

- 1063 **Voutsinou-Taliadouri, F.** (1983) Monitoring of some metals in some marine organisms from the Saronikos Gulf. Journ. Etud. Pollut. Mar. Mediterr., 6(-):329-33.
- 1064 **Voutsinou-Taliadouri, F.** (1981) Trace metals in marine organisms from the Saronikos Gulf (Greece). Journ. Etud. Pollut. Mar. Mediterr., 5(-):275-9.
- 1065 **Vreeland, V.** (1974) Uptake of chlorobiphenyls by oysters. Environ. Pollut., 6(2):135-40.
- 1066 **Wade, T. L., E. L. Atlas, J. M. Brooks, M. C. Kennicutt, J. Sericano, D. De Freitas, T. White, and M. Wood** (1988) Contaminant distribution in oysters and sediments from the Gulf of Mexico. J. Shellfish. Res., 7(1):198.
- 1067 **Wade, T. L., E. L. Atlas, J. M. Brooks, M. C. Kennicutt, R. G. Fox, J. Sericano, B. Garcia-Romero, and D. De Freitas** (1988) NOAA Gulf of Mexico Status and Trends Program: trace organic contaminant distribution in sediments and oysters. Estuaries, 11(3):171-9.
- 1068 **Wade, T. L., J. M. Brooks, M. C. Kennicutt, T. J. McDonald, G. J. Denoux, and T. J. Jackson** (1991) Oysters as biomonitors of oil in the ocean. Proc. 23rd Ann. Offshore Technology Conf. Houston, Texas, May 6 - 9, 1991. 275-80 (Paper OTC 6529).
- 1069 **Wade, T. L., B. Garcia-Romero, and J. M. Brooks** (1990) Butyltins in sediments and bivalves from U. S. coastal areas. Chemosphere, 20(6):647-62.
- 1070 **Wade, T. L., and B. Garcia-Romero** (1989) Status and trends of tributyltin contamination of oysters and sediments from the Gulf of Mexico. In: Proc. Oceans '89. Seattle, WA, September 18 - 21, 1989. IEEE Publishing Serv., New York, NY. 550-3.
- 1071 **Wade, T. L., B. Garcia-Romero, and J. M. Brooks** (1988) Tributyltin contamination in bivalves from United States coastal estuaries. Environ. Sci. Technol., 22(12):1488-93.
- 1072 **Wade, T. L., B. Garcia-Romero, and J. M. Brooks** (1988) Tributyltin analyses in association with NOAA's National Status and Trends Program. In: Proc. Oceans '88. Baltimore, MD, October 31 - November 2, 1988. IEEE Publishing Serv., New York, NY. 1198-1201.
- 1073 **Wade, T. L., J. L. Sericano, B. Garcia-Romero, J. M. Brooks, and B. J. Presley** (1990) Gulf coast NOAA National Status and Trends Mussel Watch: the first four years. In: Proc. MTS '90 Conf. Washington, DC, September 26 - 28, 1990. 550-3.

- 1074 **Wade, T. L., and J. L. Sericano** (1989) Trends in organic contaminant distributions in oysters from the Gulf of Mexico. In: Proc., Oceans '89. Seattle, WA, September 18 - 21, 1989. IEEE Publishing Serv., New York, NY. 585-9.
- 1075 **Waldock, M. J.** (1986) Organotin in UK estuaries, 1982-1986. Evaluation of the environmental problem. In: Organotin Symposium (at Oceans '86). Washington, D.C., September 23-5, 1986. IEEE Publishing Serv., New York, NY. 1324-30.
- 1076 **Waldock M. J., and D. Miller** (1983) The determination of total and tributyltin in seawater and oysters in areas of high pleasure craft activity. ICES-CM-1983/E:12, International Council for the Exploration of the Sea, Copenhagen, Denmark, 17 pp.
- 1077 **Waldock M. J., J. E. Thain, and D. Miller** (1983) The accumulation and depuration of bis(tributyltin)oxide in oysters: a comparison between the Pacific oyster (*Crassostrea gigas*) and the European flat oyster (*Ostrea edulis*). ICES-CM-1983/E:52, International Council for the Exploration of the Sea, Copenhagen, Denmark.
- 1078 **Waldock, M. J., and J. E. Thain** (1983) Shell thickening in *Crassostrea gigas*: organotin antifouling or sediment induced? Mar. Pollut. Bull., 14(11):411-5.
- 1079 **Walker, T. I.** (1982) Effects of length and locality on the mercury content of blacklip abalone, *Notohalotis ruber* (Leach), blue mussel, *Mytilus edulis planulatus* (Lamarck), sand flathead, *Platycephalus bassensis* Cuvier & Valenciennes, and long-nosed flathead, *Platycephalus caeruleopunctatus* (McCulloch), from Port Phillip Bay, Victoria. Aust. J. Mar. Freshwater Res., 33(3):553-60.
- 1080 **Ward, D., and G. J. Flick** (1990) The effects of salinity and temperature on selected elements in oysters (*Crassostrea virginica*). J. Food Comp. Anal., 3(1):96-8.
- 1081 **Ward, R. E.** (1990) Metal concentrations and digestive gland lysosomal stability in mussels from Halifax Inlet, Canada. Mar. Pollut. Bull., 21(5):237-40.
- 1082 **Ward, T. J.** (1982) Effect of cadmium on particle clearance by the Sydney rock oyster, *Saccostrea commercialis* (L. & R.). Aust. J. Mar. Freshwater Res., 33(4):711-5.
- 1083 **Ward, T. J.** (1982) Laboratory study of the accumulation and distribution of cadmium in the Sydney rock oyster *Saccostrea commercialis* (L & R). Aust. J. Mar. Freshwater Res., 33(-):33-44.

- 1084 Ward, T. J., R. L. Correll, and R. B. Anderson (1986) Distribution of cadmium, lead and zinc amongst the marine sediments, seagrasses and fauna, and the selection of sentinel accumulators, near a lead smelter in South Australia. Aust. J. Mar. Freshwater Res., 37(-):567-85.
- 1085 Watling, H. R. (1983) Accumulation of seven metals by *Crassostrea gigas*, *Crassostrea margaritacea*, *Perna perna*, and *Choromytilus meridionalis*. Bull. Environ. Contam. Toxicol., 30(3):317-22.
- 1086 Watling, H. R., and R. J. Watling (1982) Comparative effects of metals on the filtering rate of brown mussel (*Perna perna*). Bull. Environ. Contam. Toxicol., 29(-):651-7.
- 1087 Watling, H. R., and R. J. Watling (1976) Trace metals in *Choromytilus meridionalis*. Mar. Pollut. Bull., 7(5):91-4.
- 1088 Watling, H. R., and R. J. Watling (1976) Trace metals in oysters from Knysna estuary. Mar. Pollut. Bull., 7(3):45-8.
- 1089 Watling, R. J., and H. R. Watling (1982) Metal surveys in South Africa estuaries. 1. Swartkops River. Water S. A., 8(1):26-35.
- 1090 Waugh, G. D., and A. Ansell (1956) The effect, on oyster spatfall, of controlling barnacle settlement with DDT. Ann. Appl. Biol., 44(-):619-25.
- 1091 Webb, J., D. J. Macey, and V. Talbot (1985) Identification of ferritin as a major high molecular weight zinc-binding protein in the tropical rock oyster, *Saccostrea cucullata*. Arch. Environ. Contam. Toxicol., 14(-):403-7.
- 1092 Westernhagen, H. v., V. Dethlefsen, H. Rosenthal, and et al. (1978) Fate and effects of cadmium in an experimental marine ecosystem. Helgolaender Wissenschaftliche Meeresuntersuchungen, 31(4):471-84.
- 1093 Wharfe, J. R., and W. L. F. Van den Broek (1978 or 8:31-4, 1977; 77-W-1) Chlorinated hydrocarbons in macroinvertebrates and fish from the lower Medway estuary, Kent. Mar. Pollut. Bull., 9(3):76-9.
- 1094 Wharfe, J. R., and W. L. F. Van Den Broek (1977) Heavy metals in macroinvertebrates and fish from the lower Medway estuary, Kent. Mar. Pollut. Bull., 8(-):31-4.
- 1095 White, H. H. (1984) Mussel madness: use and misuse of biological monitors of marine pollution. In: Concepts in Marine Pollution, White, H. H. (ed.), University of Maryland, College Park, MD.

- 1096 Whyte, J. N. C., and J. R. Englar (1982) Seasonal variation in the chemical composition and condition indices of Pacific oyster, *Crassostrea gigas*, grown in trays or on the sea bed. Can. J. Fish. Aquat. Sci., 39(-):1084-94.
- 1097 Widdows, J., T. Bakke, B. L. Bayne, P. Donkin, D. R. Livingstone, D. M. Lowe, M. N. Moore, S. V. Evans, and S. L. Moore (1982) Responses of *Mytilus edulis* on exposure to the water-accommodated fraction of North Sea oil. Mar. Biol., 67(-):15-31.
- 1098 Widdows, J., K. A. Burns, N. R. Menon, D. S. Page, and S. Soria (1990) Measurement of physiological energetics (scope for growth) and chemical contaminants in mussels (*Arca zebra*) transplanted along a contamination gradient in Bermuda, North Atlantic Ocean. J. Exp. Mar. Biol. Ecol., 138(1-2):99-118.
- 1099 Widdows, J., and P. Donkin (1989) The application of combined tissue residue chemistry and physiological measurements of mussels (*Mytilus edulis*) for the assessment of environmental pollution. Hydrobiol., -(188-89):455-61.
- 1100 Widdows, J., and P. Donkin (1988) Interpretation of relationship between growth and concentration of aromatic hydrocarbons in the tissue of *Mytilus edulis*: mechanisms of toxicity and ecological consequences. Mar. Environ. Res., 24(-):254.
- 1101 Widdows, J., P. Donkin, P. N. Salkeld, J. J. Cleary, D. M. Lowe, S. V. Evans, and P. E. Thompson (1984) Relative importance of environmental factors in determining physiological differences between two populations of mussels (*Mytilus edulis*). Mar. Ecol., 17(-):33-47.
- 1102 Widdows, J., S. L. Moore, K. R. Clarke, and P. Donkin (1983) Uptake, tissue distribution and elimination of (1-14C)naphthalene in the mussel *Mytilus edulis*. Mar. Biol., 76(2):109-14.
- 1103 Willard, J. T. (1908) On the occurrence of copper in oysters. J. A. C. S., 30(-):902-4.
- 1104 Winchester, R. V. (1988) Trace metal levels in fish from the Manukau Harbor, Auckland, New Zealand, related to a water pollution incident. N. Z. J. Mar. Freshwater Res., 22(4):621-4.
- 1105 Winchester, R. V., and D. L. Keating (1980) Trace metal and organochlorine pesticide residues in New Zealand farmed oysters: a preliminary survey. N. Z. J. Sci., 23(2):161-9.
- 1106 Windom, H. L., and R. J. Smith (1972) Distribution of iron, magnesium, copper, zinc, and silver in oysters along the Georgia coast. J. Fish. Res. Bd. Can., 29(-):450-2.

- 1107 Wise, S. A., S. N. Chesler, H. S. Hertz, W. E. May, F. R. Guenther, and L. R. Hilpert (1980) Determination of trace level hydrocarbons in marine biota. Pergamon Ser. Anal. Chem., 3(Anal. Tech. Environ. Chem.): 41-51.
- 1108 Wise, S. A., S. N. Chesler, F. R. Guenther, H. S. Hertz, L. R. Hilpert, W. E. May, and R. M. Parrls (1980) Interlaboratory comparison of determinations of trace level hydrocarbons in mussels. Anal. Chem., 48(-):578-83.
- 1109 Wolfe, D. A. (1970) Levels of stable Zn and 65-Zn in *Crassostrea virginica* from North Carolina. J. Fish. Res. Bd. Can., 27(-):47-57.
- 1110 Wolfe, D. A. (1970) Zinc enzymes in *Crassostrea virginica*. J. Fish. Res. Bd. Can., 27(-):56-9.
- 1111 Wolfe D. A., R. C. Clark, C. A. Foster, J. W. Hawkes, and W. D. Macleaod (1981) Hydrocarbon accumulation and histopathology in bivalve molluscs transplanted to (France) the Baie de Morlaix and the Rade de Brest. Amoco Cadiz: Consequences Pollut. Accid. Hydrocarbures, Actes Colloq. Int., 599-616, Cent. Natil. Exploit. Oceans, Paris, France.
- 1112 Won, J. H. (1973) The concentration of mercury, cadmium, lead and copper in fish and shellfish of Korea. Bull. Korean Fish. Soc., 6(1-2):1-19 (Korean).
- 1113 Wong, M. H., K. C. Chan, and C. K. Choy (1978) The effect of the iron ore tailings on the coastal environment of Tolo Harbor, Hong-Kong. Environ. Res., 15(3):342-356.
- 1114 Wrench, J. J. (1978) Biochemical correlates of dissolved mercury uptake by the oyster *Ostrea edulis*. Mar. Biol., 47(1):79-86.
- 1115 Wright, D. A., J. A. Mihursky, and H. L. Phelps (1985) Trace metals in Chesapeake Bay oysters: intra-sample variability and its implications for biomonitoring. Mar. Environ. Res., 16(3):181-97.
- 1116 Yoshida, T., T. Kawabata, and Y. Matsue (1967) Tranference mechanism of mercury in marine environment. J. Tokyo Univ. Fish., 53(-):73-84.
- 1117 Young, D. R., G. V. Alexander, and D. McDermott-Ehrlich (1979) Vessel-related contamination of southern California harbours by copper and other metals. Mar. Pollut. Bull., 10(2):50-56.
- 1118 Young D. R., and T. C. Heesen (1974) Contaminants in harbors. SCCWRP Annual Rep., So. California Coast. Water Res. Project, El Segundo, CA, 105-8.

- 1119 Young D. R., and T. C. Heesen (1977) Polychlorinated biphenyls in the nearshore ecosystem off San Diego, California. SCCWRP-109, So. California Coast. Water Res. Project, El Segundo, CA, 21 pp.
- 1120 Young, D. R., T. - K. Jan, and T. C. Heesen (1977) Cycling of trace metal and chlorinated hydrocarbon wastes in the southern California Bight. In: Estuarine Interact. Proc., Biannu. Int. Estuarine Res. Conf., Wiley, M. L. (ed.), Academic, New York, NY, 481-96.
- 1121 Young, D. R., D. J. McDermott, and T. C. Heesen (1975) Polychlorinated biphenyls off Southern California. In: Proc., Intl. Conf. on Environmental Sensing and Assessment. Las Vegas. Nevada, September 14 - 19. IEEE. 5(4-1):5 pp.
- 1122 Young, D. R., and D. J. McDermott (1976) Trace element anomalies in marine organisms off Souther California. Rep. California Coop. Ocean. Fish. Invest., 18(-):162-6.
- 1123 Young D. R., and D. J. McDermott (1975) Trace metals in harbor mussels. SCCWRP Annual Rep., So. California Coast. Water Res. Project, El Segundo, CA, 139-42.
- 1124 Young D. R., and I. E. Szpila (1975) Decreases of DDT and PCB in mussels. SCCWRP Annual Rep., So. California Coast. Water Res. Project, El Segundo, CA, 123-6.
- 1125 Young, D. R., T. C. Heesen, and D. J. McDermott (1976) An offshore biomonitoring system for chlorinated hydrocarbons. Mar. Pollut. Bull., 7(8):156-9.
- 1126 Zamuda C. D. (1984) The bioavailability of copper to the American oyster, *Crassostrea virginica*. University of Maryland, College Park, MD.
- 1127 Zaroogian, G. E. (1980) *Crassostrea virginica* as an indicator of cadmium pollution. Mar. Biol., 58(4):275-84.
- 1128 Zaroogian, G. E., and G. L. Hoffman (1982) Arsenic uptake and loss in the American oyster *Crassostrea virginica*. Environ. Monit. Assess., 1(-):345-58.
- 1129 Zaroogian, G. E., G. Morrison, and J. F. Heltshe (1979) *Crassostrea virginica* as an indicator of lead pollution. Mar. Biol., 52(2):189-96.
- 1130 Zarroogian, G. E., and S. Cheer (1976) Accumulation of cadmium by the American oyster, *Crassostrea virginica*. Nature (London), 261(-):408-10.

- 1131 **Zeisler, R., S. F. Stone, and R. W. Sanders** (1988) Sequential determination of biological and pollutant elements in marine bivalves. Anal. Chem., 60(24):2760-5.
- 1132 **Zitko, V.** (1975) Aromatic hydrocarbons in aquatic fauna. Bull. Environ. Contam. Toxicol., 14(-):621-31.
- 1133 **Zitko, V.** (1971) Polychlorinated biphenyls and organochlorine pesticides in some freshwater and marine fishes. Bull. Environ. Contam. Toxicol., 6(5):464-70.
- 1134 **Zitko, V., and P. M. K. Choi** (1971) PCB and other industrial halogenated hydrocarbons in the environment. Fish. Res. Bd. Can. Tech. Rep., 272(-):55 pp.
- 1135 **Zook, E. G., J. J. Powell, B. M. Hackley, J. A. Emerson, J. R. Brooker, and G. M. Knobl** (1976) National Marine Fisheries Service preliminary survey of selected seafoods for mercury, lead, cadmium, chromium, and arsenic content. J. Agr. Food Chem., 24(-):47-53.
- 1136 **Zoulian, C., and A. Jensen** (1989) Accumulation of organic and inorganic tin in blue mussel, *Mytilus edulis*, under natural conditions. Mar. Pollut. Bull., 20(6):281-6.

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APPENDIX III
Other Relevant Citations

Amiard, J. C., B. Berthet, and C. Metayer (1989) Comparative importance of analytical, biological, and ecological fluctuations in determining sampling procedures adapted to metal bioaccumulation studies. J. Rech. Oceanogr., 14(1-2):53-7.

Andersen, N. R., R. Dawson, J. C. Duinker, J. W. Farrington, A. H. Knap, and G. Kullenberg (1988) Objectives, components and experiences in the development of the IOC Marine Pollution Monitoring system (MARPOLMON). Environ. Monit. Assess., 11(-):299-314.

Andreu, B. (1968) Fishery and culture of mussels and oysters in Spain. In: Proc. Symp. on Mollusca. 3. January 12 - 16, Marine Biology Association of India, Cochin, India. 835-46.

Bauer, I., S. Weigelt, and W. Ernst (1989) Biotransformation of hexachlorobenzene in the blue mussel (*Mytilus edulis*). Chemosphere, 19(10-11):1701-8.

Beasley T. M. (1984) Cycling of transuranic radionuclides in the Columbia river, its estuary and the northeast Pacific Ocean. Progress report. Jan. - Dec. 1984. DOE/EV7003013, Department of Energy, Washington, DC, 22 pp.

Bebiano, M. J., and W. J. Langston (1991) Metallothionein induction in *Mytilus edulis* exposed to cadmium. Mar. Biol., 108(-):91-6.

Becker, D. S., G. R. Bilyard, and T. C. Ginn (1990) Comparisons between sediment bioassays and alterations of benthic macroinvertebrate assemblages at a marine Superfund site: Commencement Bay, Washington. Environ. Toxicol. Chem., 9(5):669-85.

Blogoslawski W. J. (1983) Influence of water quality on shellfish culture. ICES-CM-1983/F:8, International Council for the Exploration of the Sea, Copenhagen, Denmark, 36 pp.

Bocquené, G., F. Galgani, and P. Truquet (1990) Characterization and assay conditions for use of AChE activity from several marine species in pollution monitoring. Mar. Environ. Res., 30(2):75-90.

Bonotto, S., D. van der Ben, F. Capot, J. M. Bouquegneau, and M. Cogneau (1988) Technetium in coastal environments: field observations and laboratory experiments. Metals in Coastal Environments of Latin America, Springer-Verlag, New York, 222-36.

Borthwick, P. W., G. H. Cook, and J. M. Patrick (1974) Mirex residues in selected estuaries of South Carolina - June 1972. Pest. Monit. J., 7(-):144-5.

Brown, D., and R. S. Thompson (1982) Phthalates and the aquatic environment. Part II. The bioconcentration and depuration of di-2-ethylhexyl phthalate (DEHP) and di-isodecyl phthalate (DIDP) in mussels (*Mytilus edulis*). Chemosphere, 11(-):427-35.

- Carell, B., S. Forberg, E. Grundelius, L. Henrikson, A. Johnels, U. Lindh, H. Mutvei, M. Olsson, K. Svaerdstroem, and T. Westermark (1987) Can mussel shells reveal environmental history? Ambio, 16(1):2-10.
- Coakley, J. E., J. E. Campbell, and E. F. McFarren (1964) Determination of butoxyethanol ester of 2,4-dichlorophenoxy acetic acid in shellfish and fish. J. Agr. Food Chem., 12(3):262-5.
- Frazier, J. M. (1986) Cadmium-binding proteins in the mussel, *Mytilus edulis*. Environ. Health Perspec., 65(-): 39-43.
- Friocourt, M. P., F. Berthou, and D. Picart (1982) Dibenzothiophene derivatives as organic markers of oil pollution. Toxicol. Environ. Chem., 5(3-4):205-15.
- Galtsoff, P. S. (1964) The American oyster *Crassostrea virginica* Gmelin. Fish. Bull., US Fish Wildl. Serv., 64(-): 1-480.
- George, S. G., E. Carpena, T. L. Coombs, J. Overnell, and A. Youngson (1979) Characterization of cadmium binding protein from mussels *Mytilus edulis* (L.) exposed to cadmium. Biochim. Biophys. A., 580(2):225-233.
- Griffin, J. J., M. Koide, V. Hodge, and E. D. Goldberg (1980) Estimating the age of mussels by chemical means. Isotop. Mar. Chem., 11(-):193-209.
- Hale, R. C., J. Greaves, K. Gallagher, and G. G. Vadas (1990) Novel chlorinated terphenyls in sediments and shellfish of an estuarine environment. Environ. Sci. Technol., 24(11):1727-31.
- Harrison, F. L., J. R. Lam, and J. Novacek (1987) Partitioning of metals among metal-binding proteins in the bay mussel, *Mytilus edulis*. Mar. Environ. Res., 24(1-4): 167-70.
- Harry, H. W. (1986) The relevancy of the generic concept to the geographical distribution of living oysters (*Gryphaeidae* and *Ostreidae*). Am. Malacol. Bull., 4(2): 157-62.
- Heit, M., and C. S. Klusek (1982) The effects of dissecting tools on the trace element concentrations of fish and mussel tissues. Sci. Total Environ., 24(2):129-34.
- Herbert, A., and R. K. Zahn (1990) Monitoring DNA damage in *Mytilus galloprovincialis* and other aquatic animals. II. Pollution effects on DNA denaturation characteristics. Z. Angew. Zool., 7(1):13-33.
- Imanaka, M., K. Matsunaga, A. Shigeta, and T. Ishida (1981) Oxadiazon residues in fish and shellfish. J. Pest. Sci., 6(4):413-8.
- Jablonski, W., and D. G. Lytoon (1980) Scanning electron microscope localization of zinc granules in the oyster *Ostrea angasi* by electron imaging. Scanning, 3(-): 288-91.

Julshamn, K., and K. J. Andersen (1983) Subcellular distribution of major and minor elements in unexposed mollusks in Western Norway - III. The distribution and binding of cadmium, zinc, copper, magnesium, manganese, iron and lead in the kidney and the digestive system of the horse mussel *Modiolus modiolus*. Comp. Biochem. Physiol., 75A(1): 17-20.

Kira, S., T. Izumi, and M. Ogata (1983) Detection of dibenzothiophene in mussel, *Mytilus edulis*, as a marker of pollution by organosulfur compounds in a marine environment. Bull. Environ. Contam. Toxicol., 31(5):518-25.

Knezovich, J. P., M. P. Lawton, and F. L. Harrison (1988) In-vivo metabolism of aromatic amines by the bay mussel *Mytilus edulis*. Mar. Environ. Res., 24(1-4):89-92.

Knutzen, J., and M. Oehme (1989) Polychlorinated dibenzofuran PCDF and dibenzo-p-dioxin PCDD levels in organisms and sediments from the Frierfjord, southern Norway. Chemosphere, 19(12):1897-910.

Kurelec, B. (1985) Exclusive activation of aromatic amines in the marine mussel *Mytilus edulis* by FAD-containing monooxygenase. Biochem. Biophys. Res. Commun., 127(-):773-8.

Kurelec, B., S. Britvic, and R. K. Zahn (1985) The activation of aromatic amines in some marine invertebrates. Mar. Environ. Res., 17(2-4):141-4.

Kurelec, B., S. Britvic, S. Krca, and R. K. Zahn (1986) The metabolic fate of aromatic amines in the mussel *Mytilus galloprovincialis*. Mar. Biol., 91(4):523-7.

Kurelec, B., M. Chacko, S. Krca, A. Garg, and R. C. Gupta (1988) DNA adducts in marine mussel and fresh water fishes living in polluted and unpolluted environments. In: Abs., 196th American Chemical Society Meeting. Los Angeles, CA, September 25-30, 1988. American Chemical Society, Washington, DC. 74.

Kurelec, B., M. Chacko, and R. C. Gupta (1988) Postlabeling analysis of carcinogen-DNA adducts in mussel, *Mytilus galloprovincialis*. Mar. Environ. Res., 24(1-4): 317-20.

Kurelec, B., A. Garg, S. Krca, and R. C. Gupta (1989) DNA adducts as biomarkers in genotoxic risk assessment in the aquatic environment. Mar. Environ. Res., 28(1-4):317-21.

Langston, W. J., M. J. Bebianno, and M. Zhou (1989) A comparison of metal-binding proteins and cadmium metabolism in the marine mollusks *Littorina littorea* (Gastropoda), *Mytilus edulis* and *Macoma baltica* (Bivalvia). Mar. Environ. Res., 28(1-4):195-200.

Lee, R. F. (1986) Glutathione S-transferase in marine invertebrates from Langesundfjord. Mar. Ecol., 46(1-3):33-6.

Lobel, P. B. (1987) Inherent variability in the ratio of zinc to other elements in the kidney of the mussel *Mytilus edulis*. Comp. Biochem. Physiol., 87C(1):47-50.

Long, E. R., and P. M. Chapman (1985) A sediment quality triad: measures of sediment contamination, toxicity and infaunal community composition in Puget Sound (Washington, USA). Mar. Pollut. Bull., 14(10):405-15.

Lytton, D. G., and W. Jablonski (1980) Combined x-ray analysis and electron microscopy of zinc in oyster tissue. Pathology, 12(-):298.

Marganian, V. M., and W. J. Wall (1972) Dursban and diazinon residues in biota following treatment of intertidal plots on Cape Cod - 1967-69. Pest. Monit. J., 6(-):160-5.

Martin M., G. Ichikawa, J. Goetzi, and M. de los Reyes (1982) An evaluation of physiological stress in mussels related to toxic substance-tissue accumulation in California marine waters. Spec. Projects Rep. 82-2 sp, SWRCB, Sacramento, CA,

May, K., M. Stoeppler, and K. Reisinger (1987) Studies in the ratio total mercury/methylmercury in the aquatic food chain. Toxicol. Environ. Chem., 13(3-4):153-9.

Miyata, H., K. Takayama, J. Ogaki, T. Kashimoto, and S. Fukushima (1987) Monitoring of PCDDs in Osaka Bay using blue mussel. Chemosphere, 16(-):8-9.

Miyata, H., K. Takayama, J. Ogaki, T. Kashimoto, and S. Fukushima (1987) Polychlorinated dibenzo-p-dioxins in blue mussel from marine coastal water in Japan. Bull. Environ. Contam. Toxicol., 39(-):877-83.

Miyata, H., K. Takayama, J. Ogaki, M. Mimura, and T. Kashimoto (1988) Study of polychlorinated dibenzo-p-dioxins and dibenzofurans in rivers and estuaries in Osaka bay in Japan. Toxicol. Environ. Chem., 17(-):91-101.

Moore, M. N., and S. V. Farrar (1985) Effects of polynuclear aromatic hydrocarbons on lysosomal membranes in molluscs. Mar. Environ. Res., 17(2-4):222-5.

Murthy, G. K., A. S. Goldin, and J. E. Campbell (1959) Zinc-65 in foods. Science, 130(-):1255-66.

Nagaya, Y., and T. R. Folsom (1964) Zinc-65 and other fallout nuclides in marine organisms of the California coast. J. Rad. Res., 5(-):82-9.

Naqvi, S. M., and A. A. de la Cruz (1973) Mirex incorporation in the environment: residues in nontarget organisms - 1972. Pest. Monit. J., 7(-):104-11.

National Academy of Sciences (1980) Mussel health. (B. L. Bayne, Session Chairman). Rep. Workshop The International Mussel Watch. Barcelona, Spain, December 4 - 7, 1978. National Academy of Science, Washington, DC. 163-235.

National Academy of Sciences (1980) Radionuclides. (E. D. Goldberg, Session Chairman). Rep. Workshop The International Mussel Watch. Barcelona, Spain, December 4 - 7, 1978. National Academy of Science, Washington, DC. 142-162.

- Noël-Lambot, F. (1975) Distribution of cadmium, zinc and copper in the mussel *Mytilus edulis*. Existence of cadmium-binding proteins similar to metallothioneins. Experientia, 32(3):324-6.
- Nolan, C. V., and E. J. Duke (1983) Cadmium accumulation and toxicity in *Mytilus edulis*: involvement of metallothioneins and heavy-molecular weight protein. Aquat. Toxicol., 4(-):153-63.
- Ogata, M., and K. Fujisawa (1983) Capillary GC/MS determination of organic sulfur compound detected in oyster and mussel caught in the sea as an oil pollution index. J. Chromatogr. Sci., 21(-):420-4.
- Ogata, M., and Y. Miyake (1981) Identification of organic sulfur compounds and polycyclic hydrocarbons transferred to shellfish from petroleum suspension by capillary mass chromatography. Water Res., 15(2):257-66.
- Palmieri J., H. Livingston, and J. W. Farrington (1984) U. S. "Mussel Watch" Program: transuranic element data from Woods Hole Oceanographic Institution 1976-1983. Technical Report. WHOI-84-28, Woods Hole Oceanographic Inst., Woods Hole, MA, 82 pp.
- Pentreath, R. J. (1973) The accumulation from water of 65-Zn, 54-Mn, 58-Co and 59-Fe by the mussel *Mytilus edulis*. J. Mar. Biol. Assoc. U. K., 53(1):127-43.
- Porte, C., D. Barcelo, T. M. Tavares, V. C. Rocha, and J. Albaiges (1990) The use of the mussel watch and molecular marker concepts in studies of hydrocarbons in a tropical bay Todos os Santos, Bahia, Brazil. Arch. Environ. Contam. Toxicol., 19(2):263-74.
- Preston, E. M. (1971) The importance of ingestion in chromium-51 accumulation by *Crassostrea virginica* (Gmelin). J. Exp. Mar. Biol. Ecol., 6(-):47-54.
- Rawls, C. K., and G. F. Beaven (1963) Results of a 1962 field experiment subjecting certain estuarine animals to 2, 4-D ester. Proc., Southern Weed Conf., 16(-):343-4.
- Reimold, R. J., and C. J. Durant (1974) Toxaphene content of estuarine fauna and flora before, during, and after dredging toxaphene-contaminated sediments. Pest. Monit. J., 8(-):44-9.
- Riemann, B., and E. Hoffman (1991) Ecological consequences of dredging and bottom trawling in the Limfjord, Denmark. Mar. Ecol., 69(1-2):171-8.
- Romeril, M. G. (1971) The uptake and distribution of Zn-65 on oysters. Mar. Biol., 9(-):347-54.
- Rose, K. A., J. K. Summers, R. I. McLean, and S. L. Domotor (1988) Radiosilver (Ag-110m) concentrations in Chesapeake Bay oysters maintained near a nuclear power plant: a statistical analysis. Environ. Monit. Assess., 10(3):205-18.

- Scarpato, R., L. Migliore, G. Alfinito-Cognetti, and R. Barale (1990) Induction of micronuclei in gill tissue of *Mytilus galloprovincialis* exposed to polluted marine waters. Mar. Pollut. Bull., 21(2):74-80.
- Schelenk, D., and D. R. Butler (1989) Xenobiotic biotransformation of the Pacific oyster (*Crassostrea gigas*). Comp. Biochem. Physiol., 94C(2):469-75.
- Sevareid, R., and G. Ichikawa (1983) Physiological stress (scope for growth) of mussels in San Francisco Bay. In: Proc., Symp. "Ocean Disposal 1980s," Waste Disposal Oceans: Minimizing Impact, Maximizing Benefits. Westview, Boulder, CO. 152-70.
- Shimizu, M., I. Kajihara, I. Suyama, and Y. Hiyama (1971) Uptake of 58-Co by mussel, *Mytilus edulis*. J. Rad. Res., 12(1):17-28.
- Talbot, V., and C. Simpson (1983) The validity of using arithmetic means to summarize environmental pollution data. Chem. Aust., 50(-):156-8.
- Tavares, T. M., V. C. Rocha, C. Porte, D. Barcelo, and J. Albaiges (1988) Application of the Mussel Watch concept in studies of hydrocarbons, PCBs and DDT in the Brazilian bay of Todos os Santos (Bahia). Mar. Pollut. Bull., 19(11): 575-8.
- Van Dolah, F. M., T. C. Siewicki, G. W. Collins, and J. S. Logan (1987) Effects of environmental parameters on the elimination of cadmium by eastern oysters, *Crassostrea virginica*. Arch. Environ. Contam. Toxicol., 16(6):733-43.
- Viarengo, A., G. Mancinelli, M. Orunesu, G. Martino, F. Faranda, and A. Mazzucotelli (1988) Effects of sublethal copper concentrations, temperature, salinity and oxygen levels on calcium content and on cellular distribution of copper in the gills of *Mytilus galloprovincialis* Lam.: a multifactorial experiment. Mar. Environ. Res., 24(1-4): 227-31.
- Viarengo, A., M. N. Moore, G. Mancinelli, A. Mazzucotelli, R. K. Pipe, and S. Farrar (1987) Metallothioneins and lysosomes in metal toxicity and accumulation in marine mussels the effect of cadmium in the presence and absence of phenanthrene. Mar. Biol., 94(2): 251-8.
- Watanabe, I., T. Kashimoto, and R. Tatsukawa (1987) Polybrominated biphenyl ethers in marine fish, shellfish and river and marine sediments in Japan. Chemosphere, 16(10-12): 2389-96.
- Watson, D. G., J. J. Davis, and W. C. Hanson (1961) Zinc-65 in marine organisms along the Oregon and Washington coasts. Science, 133(-):182608.
- Whitehead, N. E., S. Ballestra, E. Holm, and L. Huynh-Ngoc (1988) Chernobyl USSR radionuclides in shellfish. J. Environ. Rad., 7(2):107-22.
- Wofford, H. W., C. D. Wilsey, G. S. Neff, C. S. Giam, and J. M. Neff (1981) Bioaccumulation and metabolism of phthalates esters by oysters, brown shrimp and sheepshead minnows. Ecotox. Environ. Safety, 5(-):202-10.

