

**NOI EXHIBIT D: RESUME/CV OF JOSEPH S. MEYER, PH.D.**

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## **EDUCATION**

1986 Ph.D. Zoology, University of Wyoming, Laramie, WY  
1973 B.S. Chemical Engineering, Lehigh University, Bethlehem, PA

## **ACADEMIC POSITIONS**

2005-2007 Professor, Department of Zoology and Physiology, University of Wyoming  
1999-2005 Associate Professor, Department of Zoology and Physiology, University of Wyoming  
1999-2004 Director, Red Buttes Environmental Biology Laboratory, University of Wyoming  
1994-1999 Assistant Professor, Department of Zoology and Physiology, University of Wyoming  
1991-1993 Coordinator, Wastewater Utilization Graduate Program, Humboldt State University, Arcata, CA  
1990-1993 Lecturer, Department of Fisheries, Humboldt State University, Arcata, CA

## **OTHER POSITIONS**

2007-Present Technical Expert and Principal Scientist, ARCADIS U.S., Inc., Lakewood, Colorado  
1989-1990 Postdoctoral Researcher, University of Wyoming-National Park Service Research Center, University of Wyoming  
1988-1989 Postdoctoral Researcher, Lake Research Laboratory, Swiss Federal Institute for Water Resources and Water Pollution Control (EAWAG/ETH), Kastanienbaum, Switzerland  
1987-1988 NATO Postdoctoral Research Fellow, Lake Research Laboratory, Swiss Federal Institute for Water Resources and Water Pollution Control (EAWAG/ETH), Kastanienbaum, Switzerland  
1987 Research Scientist, Department of Zoology and Physiology, University of Wyoming  
1986 Graduate Research and Teaching Assistant, Department of Zoology and Physiology, University of Wyoming  
1980-1983 Associate Scientist, Western Aquatics, Inc., Laramie, WY [part-time]  
1976-1985 Research Scientist, Department of Zoology and Physiology, University of Wyoming  
1972-1973 Undergraduate Research Assistant, Department of Chemical Engineering, Lehigh University, Bethlehem, PA  
1972 Student Participant, NASA Summer Institute for Biomedical Engineering, Howard University and Goddard Space Flight Center, Greenbelt, MD

**TEACHING**

<b><u>Year</u></b>	<b><u>Semester</u></b>	<b><u>Course No./Title</u></b>	<b><u>Cr. Hrs.</u></b>	<b><u>Enroll- ment</u></b>
2007	Spring	ZOO 5780 – Aquatic Toxicology	3	3
2006	Fall	ENR 4500/5500 - Risk Analysis	3	14
2006	Fall	ZOO 4100 - Writing in Zoology (discussion)	1	2
2006	Spring	ZOO 4100 - Writing in Zoology (lecture)	2	23
2006	Spring	ZOO 4100 - Writing in Zoology (discussion)	1	4
2006	Spring	ZOO 5780 - Advanced Limnology	3	3
2005	Fall	ENR 4500/5500 - Risk Analysis	1	14
2005	Summer	BIOL 2400 - General Ecology	3	11
2005	Spring	ZOO 4100 - Writing in Zoology	1	5
2004	Fall	ENR 4990 - Topics: Risk Analysis	3	5
2004	Fall	ENR 5990 - Topics: Risk Analysis	3	4
2004	Fall	ZOO 4970 - Internship in Wildlife Management	1	3
2004	Fall	ZOO 4971 - Internship in Zoology & Physiology	1	1
2004	Spring	ENR 4990 - Topics: Risk Analysis	3	12
2004	Spring	ENR 5990 - Topics: Risk Analysis	3	10
2003	Fall	ZOO 4900 - Problems	3	1
2003	Fall	ZOO 4970 - Internship in Wildlife Management	1	1
2003	Spring	ZOO 5780 - Advanced Limnology	3	6
2002	Fall	ZOO 4970 - Internship in Wildlife Management	1	1
2002	Fall	ZOO 4971 - Internship in Zoology & Physiology	1	1
2002	Spring	BIOL 1000 - Principles of Biology	3	125
2002	Spring	ZOO 5890 - Seminar: Biocomplexity (co-taught with Drs. Colberg and Hall)	1	9
2001	Fall	BIOL 1000 - Principles of Biology (taught first half of one section)	3	125
2001	Fall	ZOO 1000 - Introduction to University Life	1	13
2001	Fall	ZOO 4970 - Internship in Wildlife Management	1	2
2001	Spring	BIOL 1000 - Principles of Biology	3	118
2001	Spring	ZOO 5790 - Ecotoxicology	3	2
2000	Spring	BIOL 1000 - Principles of Biology	3	126
2000	Spring	ZOO 5780 - Advanced Limnology	3	6
1999	Fall	BIOL 1000 - Principles of Biology (taught second half of 2 sections)	3	145 & 120
1999	Spring	BIOL 1000 - Principles of Biology	3	129
1998	Fall	BIOL 1000 - Principles of Biology (taught second half of one section)	3	88
1998	Fall	BIOL 2400 - General Ecology	3	73
1998	Fall	ZOO 1000 - Introduction to University Life	1	16
1998	Spring	ZOO 5780 - Advanced Limnology	3	5
1997	Fall	ZOO 1000 - Introduction to University Life (team-taught with Dr. Ken Gerow)	1	21

## TEACHING (cont.)

<u>Year</u>	<u>Semester</u>	<u>Course No./Title</u>	<u>Cr. Hrs.</u>	<u>Enroll-ment</u>
1996	Fall	BIOL 1000 - Principles of Biology (taught second half of one section)	3	100
1996	Fall	ENR 3000 - ENR Approaches (team-taught with Dr. Tom Crocker)	3	15
1996	Fall	ZOO 1000 - Introduction to University Life (team-taught with Dr. Ken Gerow)	1	20
1996	Spring	BIOL 2400 - General Ecology	3	58
1996	Spring	ZOO 5890 - Groundwater Remediation	2	16
1995	Fall	ENR 3000 - ENR Approaches (team-taught with Dr. Tom Crocker)	3	20
1995	Fall	ZOO 1000 - Introduction to University Life (team-taught with Dr. Ken Gerow)	1	19
1995	Spring	ZOO 4400 - Population Ecology	3	45
1995	Spring	ZOO 5780 - Advanced Limnology	3	14
1994	Fall	BIOL 1000 - Principles of Biology (taught second half of 2 sections)	3	180 & 152
1994	Fall	ENR 3000 - ENR Approaches (team-taught with Dr. Tom Crocker)	3	19
1994	Spring	ZOO 5890 - Groundwater Remediation	1	13

## PUBLISHED WORKS

### Peer-reviewed Journal Articles:

- Farley, K.J. and **J.S. Meyer**. 201\_. Metal mixtures modeling evaluation: 3. Lessons learned and steps forward. *Environmental Toxicology and Chemistry*: in review.
- Farley, K.J., **J.S. Meyer**, L.S. Balistreri, Y. Iwasaki, M. Kamo, S. Lofts, C.A. Mebane, W. Naito, A.C. Ryan, R.C. Santore and E. Tipping. 2015. Metal mixtures modeling evaluation: 2. Comparison of four modeling approaches. *Environmental Toxicology and Chemistry*: in press.
- DeForest, D.K. and **J.S. Meyer**. 2015. Critical review: Toxicity of dietborne metals to aquatic organisms. *Critical Reviews in Environmental Science and Technology*: in press.
- Meyer, J.S.**, K.J. Farley and E.R. Garman. 2015. Metal mixtures modeling evaluation: 1. Technical background. *Environmental Toxicology and Chemistry*: in press.
- Meyer, J.S.**, J.F. Ranville, M. Pontasch, J.W. Gorsuch and W.J. Adams. 2015. Acute toxicity of binary and ternary mixtures of Cd, Cu, and Zn to *Daphnia magna*. *Environmental Toxicology and Chemistry*: in press.
- Fulton, B.A. and **J.S. Meyer**. 2014. Development of a regression model to predict copper toxicity to *Daphnia magna* and site-specific copper criteria across multiple surface-water drainages in an arid landscape. *Environmental Toxicology and Chemistry* 33:1865-1873.
- Adams, W.J., R. Blust, U. Borgmann, K.V. Brix, D.K. DeForest, A.S. Green, **J.S. Meyer**, J.C. McGeer, P.R. Paquin, P.S. Rainbow and C.M. Wood. 2011. Utility of tissue residues for predicting effects of metals on aquatic organisms. *Integrated Environmental Assessment and Management* 7:75-98.

- DeForest, D.K., **J.S. Meyer**, R.W. Gensemer, B.K. Shephard, W.J. Adams, R.L. Dwyer, J.W. Gorsuch and E.J. Van Genderen. 2011. Are ambient water quality criteria for copper protective of olfactory impairment in fish? *Integrated Environmental Assessment and Management* 7:145-146.
- Dyer, S., M.St.J. Warne, **J.S. Meyer**, H.A. Leslie and B.I. Escher. 2011. Tissue residue approach for chemical mixtures. *Integrated Environmental Assessment and Management* 7:99-115.
- Meyer, J.S.** and W.J. Adams. 2010. Relationship between biotic ligand model-based water quality criteria and avoidance and olfactory responses to copper by fish. *Environmental Toxicology and Chemistry* 29:2096-2103.
- Kolts, J.M., C.J. Boese and **J.S. Meyer**. 2009. Effects of dietborne copper and silver on reproduction by *Ceriodaphnia dubia*. *Environmental Toxicology and Chemistry* 28:71-85.
- Kolts, J.M., M.L. Brooks, B.D. Cantrell, C.J. Boese, R.A. Bell and **J.S. Meyer**. 2008. Dissolved fraction of standard laboratory cladoceran food alters toxicity of waterborne silver to *Ceriodaphnia dubia*. *Environmental Toxicology and Chemistry* 27:1426-1434.
- Brooks, M.L., **J.S. Meyer** and C.J. Boese. 2007. Toxicity of copper to larval *Pimephales promelas* in the presence of photodegraded natural dissolved organic matter. *Canadian Journal of Fisheries and Aquatic Sciences* 64:391-401.

**Peer-reviewed Journal Articles (cont.):**

- Brooks, M.L., **J.S. Meyer** and D.M. McKnight. 2007. Photooxidation of wetland and riverine dissolved organic matter: Altered copper complexation and organic composition. *Hydrobiologia* 579:95-113.
- Meyer, J.S.**, C.J. Boese and J.M. Morris. 2007. Use of the biotic ligand model to predict pulse-exposure toxicity of copper to fathead minnows (*Pimephales promelas*). *Aquatic Toxicology* 84:268-278.
- Morris, J.M. and **J.S. Meyer**. 2007. Photosynthetically mediated Zn removal from the water column in High Ore Creek, Montana. *Water, Air, and Soil Pollution* 179:391-395.
- Bringolf, R.B., B.A. Morris, C.J. Boese, R.C. Santore, H.E. Allen and **J.S. Meyer**. 2006. Influence of dissolved organic matter on acute toxicity of zinc to larval fathead minnows (*Pimephales promelas*). *Archives of Environmental Contamination and Toxicology* 51:438-444.
- Brooks, M.L., C.J. Boese and **J.S. Meyer**. 2006. Complexation and time-dependent accumulation of copper by larval fathead minnows (*Pimephales promelas*): Implications for modeling toxicity. *Aquatic Toxicology* 78:42-49.
- Kolts, J.M., C.J. Boese and **J.S. Meyer**. 2006. Acute toxicity of copper and silver to *Ceriodaphnia dubia* in the presence of food. *Environmental Toxicology and Chemistry* 25:1831-1835.
- Meyer, J.S.**, M.J. Suedkamp, A.M. Farag and J.M. Morris. 2006. Leachability of protein and metals incorporated into aquatic invertebrates: Are species and metals-exposure history important? *Archives of Environmental Contamination and Toxicology* 50:79-87.
- Morris, J.M., A.M. Farag, D.A. Nimick and **J.S. Meyer**. 2006. Light-mediated Zn uptake in photosynthetic biofilm. *Hydrobiologia* 571:361-371.
- Morris, J.M. and **J.S. Meyer**. 2006. Extracellular and intracellular uptake of Zn in a photosynthetic biofilm matrix. *Bulletin of Environmental Contamination and Toxicology* 77:30-35.

- Morris, J.M., E. Snyder-Conn, J.S. Foott, R.A. Holt, M.J. Suedkamp, H.M. Lease, S.J. Clearwater and **J.S. Meyer**. 2006. Survival of Lost River suckers (*Deltistes luxatus*) challenged with *Flavobacterium columnare* during exposure to sublethal ammonia concentrations at pH 9.5. *Archives of Environmental Contamination and Toxicology* 50:256-263.
- Morris, J.M., A.M. Farag, D.M. Nimick and **J.S. Meyer**. 2005. Does biofilm contribute to diel cycling of Zn in High Ore Creek, Montana? *Biogeochemistry* 76:233-259.
- Lease, H.M., J.A. Hansen, H.L. Bergman and **J.S. Meyer**. 2003. Structural changes in gills of Lost River suckers exposed to elevated pH and ammonia concentrations. *Comparative Biochemistry and Physiology Part C* 134:491-500.
- Morris, J.M., S.A. Collyard and **J.S. Meyer**. 2003. Effects of chronic copper exposure on the nutritional composition of *Hyaella azteca*. *Aquatic Toxicology* 63:197-206.
- Clearwater, S.J., A.M. Farag and **J.S. Meyer**. 2002. Bioavailability and toxicity of dietborne copper and zinc to fish. *Comparative Biochemistry and Physiology Part C* 132:269-313.
- Meyer, J.S.** 2002. The utility of the terms "bioavailability" and "bioavailable fraction" for metals. *Marine Environmental Research* 53:417-423.

#### **Peer-reviewed Journal Articles (cont.):**

- Meyer, J.S.**, C.J. Boese and S.A. Collyard. 2002. Whole-body accumulation of copper predicts acute toxicity to an aquatic oligochaete (*Lumbriculus variegatus*) as pH and calcium are varied. *Comparative Biochemistry and Physiology Part C* 133:99-109.
- Meyer, J.S.** and J.A. Hansen. 2002. Subchronic toxicity of low dissolved oxygen concentrations, elevated pH, and elevated ammonia concentrations to Lost River suckers. *Transactions of the American Fisheries Society* 131:656-666.
- Dare, M.R., W.A. Hubert and **J.S. Meyer**. 2001. Influence of stream flow on hydrogen sulfide concentrations and distributions of two trout species in a Rocky Mountains tailwater. *North American Journal of Fisheries Management* 21:971-975.
- Di Toro, D.M., H.E. Allen, H.L. Bergman, **J.S. Meyer**, P.R. Paquin and R.C. Santore. 2001. Biotic ligand model of the acute toxicity of metals. 1. Technical basis. *Environmental Toxicology and Chemistry* 20:2383-2396.
- Goldstein, J.N., W.A. Hubert, D.F. Woodward, A.M. Farag and **J.S. Meyer**. 2001. Naturalized salmonid populations occur in the presence of elevated trace element concentrations and temperatures in the Firehole River, Yellowstone National Park, Wyoming. *Environmental Toxicology and Chemistry* 20:2342-2352.
- Santore, R.C., D.M. Di Toro, P.R. Paquin, H.E. Allen and **J.S. Meyer**. 2001. Biotic ligand model of the acute toxicity of metals. 2. Application to acute copper toxicity in freshwater fish and *Daphnia*. *Environmental Toxicology and Chemistry* 20:2397-2402.
- Farag, A.M., M.J. Suedkamp, **J.S. Meyer**, R. Barrows and D.F. Woodward. 2000. Distribution of metals during digestion by cutthroat trout fed invertebrates contaminated in the Clark Fork River, Montana and the Coeur d'Alene River, Idaho, U.S.A., and fed artificially contaminated *Artemia*. *Journal of Fish Biology* 56:173-190.
- Frankenbach, R. and **J.S. Meyer**. 1999. Nitrogen removal in a surface-flow wastewater treatment wetland. *Wetlands* 19:403-412.
- MacRae, R.K., A.S. Maest and **J.S. Meyer**. 1999. Selection of an organic acid analogue of dissolved organic matter for use in toxicity testing. *Canadian Journal of Fisheries and Aquatic Sciences* 56:1484-1493.

- MacRae, R.K., D.E. Smith, N. Swoboda-Colberg, **J.S. Meyer** and H.L. Bergman. 1999. Copper binding affinity of rainbow trout (*Oncorhynchus mykiss*) and brook trout (*Salvelinus fontinalis*) gills: implications for assessing bioavailable metal. *Environmental Toxicology and Chemistry* 18:1180-1189.
- Marr, J.C.A., J. Lipton, D. Cacela, J.A. Hansen, **J.S. Meyer** and H.L. Bergman. 1999. Bioavailability and acute toxicity of copper to rainbow trout in the presence of organic acids simulating natural dissolved organic carbon. *Canadian Journal of Fisheries and Aquatic Sciences* 56:1471-1483.
- Meyer, J.S.** 1999. A mechanistic explanation for the  $\ln(\text{LC50})$  vs.  $\ln(\text{hardness})$  adjustment equation for metals. *Environmental Science and Technology* 33:908-912.
- Meyer, J.S.**, R.C. Santore, J.P. Bobbitt, L.D. DeBrey, C.J. Boese, P.R. Paquin, H.E. Allen, H.L. Bergman and D.M. Di Toro. 1999. Binding of nickel and copper to fish gills predicts toxicity when water hardness varies, but free-ion activity does not. *Environmental Science and Technology* 33:913-916.

#### **Peer-reviewed Journal Articles (cont.):**

- Farag, A.M., D.F. Woodward, J.N. Goldstein, W. Brumbaugh and **J.S. Meyer**. 1998. Concentrations of metals associated with mining waste in sediments, biofilm, benthic macroinvertebrates, and fish from the Coeur d'Alene River Basin, Idaho. *Archives of Environmental Contamination and Toxicology* 34:119-127.
- Markwiese, J.T., **J.S. Meyer** and P.J.S. Colberg. 1998. Copper tolerance in iron-reducing bacteria: implications for copper mobilization in sediments. *Environmental Toxicology and Chemistry* 17:675-678.
- Marr, J.C.A., J.A. Hansen, **J.S. Meyer**, D. Cacela, T. Podrabsky, J. Lipton and H.L. Bergman. 1998. Toxicity of cobalt and copper to rainbow trout: application of a mechanistic model for predicting survival. *Aquatic Toxicology* 43:225-238.
- Meyer, J.S.**, A. Boelter, D.F. Woodward, J.N. Goldstein, A.M. Farag and W.A. Hubert. 1998. Relationships between boron concentrations and trout in the Firehole River, Wyoming, USA: historical information and preliminary results of a field study. *Biological Trace Element Research* 66:167-184.
- Marr, J.C.A., J. Lipton, D. Cacela, J.A. Hansen, H.L. Bergman, **J.S. Meyer** and C. Hogstrand. 1996. Relationship between copper exposure duration, tissue copper concentration, and rainbow trout growth. *Aquatic Toxicology* 36:17-30.
- Meyer, J.S.**, D.D. Gulley, M.S. Goodrich, D.C. Szmania and A.S. Brooks. 1995. Modeling toxicity due to intermittent exposure of rainbow trout and common shiners to monochloramine. *Environmental Toxicology and Chemistry* 14:165-175.
- Gächter, R. and **J.S. Meyer**. 1993. The role of microorganisms in mobilization and fixation of phosphorus in sediments. *Hydrobiologia* 253:103-121.
- Ingersoll, C.G., D.A. Sanchez, **J.S. Meyer**, D.D. Gulley and J.E. Tietge. 1990. Epidermal response to pH, aluminum, and calcium exposure in brook trout (*Salvelinus fontinalis*) fry. *Canadian Journal of Fisheries and Aquatic Sciences* 47:1616-1622.
- Gächter, R., **J.S. Meyer** and A. Marés. 1988. Contribution of bacteria to release and fixation of phosphorus in lake sediments. *Limnology and Oceanography* 33:1542-1558.
- Meyer, J.S.**, C.G. Ingersoll and L.L. McDonald. 1987. Sensitivity analysis of population growth rates estimated from cladoceran chronic toxicity tests. *Environmental Toxicology and Chemistry* 6:115-126.

- Meyer, J.S.,** C.G. Ingersoll, L.L. McDonald and M.S. Boyce. 1986. Estimating uncertainty in population growth rates: Jackknife vs. Bootstrap techniques. *Ecology* 67:1156-1166.
- Meyer, J.S.** and G. Linder. 1986. Exhaustive steam distillation extraction of aromatic organics from rainbow trout and water. *Environmental Toxicology and Chemistry* 5:155-159.
- Linder, G., H.L. Bergman and **J.S. Meyer**. 1985. Anthracene bioconcentration in rainbow trout during single-compound and complex-mixture exposures. *Environmental Toxicology and Chemistry* 4:549-558.
- Meyer, J.S.,** D.A. Sanchez, J.A. Brookman, D.B. McWhorter and H.L. Bergman. 1985. Chemistry and aquatic toxicity of raw oil shale leachates from Piceance Basin, Colorado. *Environmental Toxicology and Chemistry* 4:559-572.
- Woodward, D.F., R.G. Riley, M.G. Henry, **J.S. Meyer** and T.R. Garland. 1985. Leaching of retorted oil shale: Assessing the toxicity to Colorado squawfish, fathead minnows, and two food-chain organisms. *Transactions of the American Fisheries Society* 114:887-894.

#### **Peer-reviewed Journal Articles (cont.):**

- Meyer, J.S.,** M.D. Marcus and H.L. Bergman. 1984. Inhibitory interactions of aromatic organics during microbial degradation. *Environmental Toxicology and Chemistry* 3:583-587.
- Parkhurst, B.R., R.G. Elder, **J.S. Meyer**, D.A. Sanchez, R.W. Pennak and W.T. Waller. 1984. An environmental hazard evaluation of uranium in a Rocky Mountain stream. *Environmental Toxicology and Chemistry* 3:113-124.
- DeGraeve, G.M., D.L. Geiger, **J.S. Meyer** and H.L. Bergman. 1980. Acute and embryo-larval toxicity of phenolic compounds to aquatic biota. *Archives of Environmental Contamination and Toxicology* 9:557-568.

#### **Non-peer-reviewed Journal Articles:**

- Meyer, J.S.** and G.G. Pyle. 2013. Effects of anthropogenic chemicals on chemosensation and behavior in fish: Organismal, ecological, and regulatory implications. *Fisheries* 38:283-284.
- Linder, G., H.L. Bergman and **J.S. Meyer**. 1984. Constituent bioconcentration in rainbow trout exposed to a complex chemical mixture. *Bulletin of Environmental Contamination and Toxicology* 33:330-338.
- Parkhurst, B.R., **J.S. Meyer**, G.M. DeGraeve and H.L. Bergman. 1981. A reevaluation of the toxicity of coal conversion process waters. *Bulletin of Environmental Contamination and Toxicology* 26:9-15.

#### **Peer-reviewed Monographs:**

- Meyer, J.S.,** L.L. Irwin and M.S. Boyce. 1998. Influence of habitat fragmentation on spotted owls in western Oregon. *Wildlife Monographs* 139:1-51.

#### **Book Reviews:**

- Meyer, J.S.** 1986. Book review: *Multispecies Toxicity Testing*. *Journal of the North American Benthological Society* 5:249-250.

#### **Peer-reviewed Books:**

- Meyer, J.S.,** S.J. Clearwater, T.A. Doser, M.J. Rogaczewski and J.A. Hansen. 2007. *Effects of Water Chemistry on the Bioavailability and Toxicity of Waterborne Cadmium, Copper, Nickel, Lead, and Zinc to Freshwater Organisms*. SETAC Press, Pensacola, Florida, USA.

**Meyer, J.S.**, W.J. Adams, K.V. Brix, S.N. Luoma, D.R. Mount, W.A. Stubblefield and C.M. Wood (eds.). 2005. *Toxicity of Dietborne Metals to Aquatic Organisms*. SETAC Press, Pensacola, Florida, USA.

#### **Peer-reviewed Chapters in Books:**

Campbell, P.G.C., S.J. Clearwater, P.B. Brown, N.S. Fisher, C. Hogstrand, G.R. Lopez, L.M. Mayer and **J.S. Meyer**. 2005. Digestive physiology, chemistry, and nutrition. p. 13-57 in: J.S. Meyer, W.J. Adams, K.V. Brix, S.N. Luoma, D.R. Mount, W.A. Stubblefield and C.M. Wood (eds.), *Toxicity of Dietborne Metals to Aquatic Organisms*, SETAC Press, Pensacola, Florida, USA.

**Meyer, J.S.**, W.J. Adams, K.V. Brix, S.N. Luoma, D.R. Mount, W.A. Stubblefield and C.M. Wood. 2005. Workshop summary and conclusions. p. 191-201 in: J.S. Meyer, W.J. Adams, K.V. Brix, S.N. Luoma, D.R. Mount, W.A. Stubblefield and C.M. Wood (eds.), *Toxicity of Dietborne Metals to Aquatic Organisms*, SETAC Press, Pensacola, Florida, USA.

Benson, W.H., H.E. Allen, J.P. Connolly, C.G. Delos, L.W. Hall, Jr., S.N. Luoma, D. Maschwitz, **J.S. Meyer**, J.W. Nichols and W.A. Stubblefield. 2003. Exposure analysis. p. 15-51 in: M.C. Reiley, W.A. Stubblefield, W.J. Adams, D.M. Di Toro, P.V. Hodson, R.J. Erickson and F.J. Keating, Jr. (eds.). *Reevaluation of the State of the Science for Water-quality Criteria Development*. SETAC Press, Pensacola, Florida, USA.

Boyce, M.S., **J.S. Meyer** and L. Irwin. 1994. Habitat-based PVA for the northern spotted owl. p. 63-85 in: D.J. Fletcher and B.F.J. Manly (eds.). *Statistics in Ecology and Environmental Monitoring*. University of Otago Press, Dunedin, New Zealand.

**Meyer, J.S.** and M.S. Boyce. 1994. Life historical consequences of pesticides and other insults to vital rates. p. 349-363 in: R.J. Kendall and T.E. Lacher, Jr. (eds.). *Wildlife Toxicology and Population Modeling: Integrated Studies of Agroecosystems*. Lewis Publishers, Boca Raton, Florida, USA.

**Meyer, J.S.**, W. Davison, B. Sundby, J.T. Oris, D.J. Laurén, U. Förstner, J. Hong and D.G. Crosby. 1994. Synopsis of discussion session: The effects of variable redox potentials, pH, and light on bioavailability in dynamic water-sediment environments. p. 155-170 in: J.L. Hamelink, P.F. Landrum, H.L. Bergman and W.H. Benson (eds.). *Bioavailability: Physical, Chemical and Biological Interactions*. Lewis Publishers, Boca Raton, Florida, USA.

Gächter, R. and **J.S. Meyer**. 1990. Mechanisms controlling fluxes of nutrients across the sediment/water interface in a eutrophic lake. p. 131-162 in: R. Baudo, J.P. Geisy and H. Muntau (eds.). *Sediments: Chemistry and Toxicity of In-place Pollutants*. Lewis Publishers, Inc., Ann Arbor, Michigan, USA.

Loewengart, G.V., W.A. Brungs, R.A. Conway, **J.S. Meyer**, D.I. Mount and D. Willis. 1986. Workshop summary and conclusions: Hazard assessment of effluents. p. 339-356 in: H.L. Bergman, R.A. Kimerle and A.W. Maki (eds.). *Environmental Hazard Assessment of Effluents*. Pergamon Press, Elmsford, New York, USA.

Bergman, H.L. and **J.S. Meyer**. 1982. Complex effluent fate modeling. p. 247-267 in: K.L. Dickson, A.W. Maki and J. Cairns, Jr. (eds.). *Modeling the Fate of Chemicals in the Aquatic Environment*. Ann Arbor Science, Ann Arbor, Michigan, USA.

### **Non-peer-reviewed Chapters in Books:**

- Kramer, J.R., H.E. Allen, W. Davison, K.L. Godtfredsen, **J.S. Meyer**, E.M. Perdue, E. Tipping, D. van de Meent and J.C. Westall. 1997. Chemical speciation and metal toxicity in surface freshwaters. p. 57-70 in: H.L. Bergman and E.J. Dorward-King (eds.). *Reassessment of Metals Criteria for Aquatic Life Protection*. SETAC Press, Pensacola, Florida, USA.
- Zeyer, J. and **J. Meyer**. 1989. Ecotoxicological criteria for final storage quality: possibilities and limits. p. 341-352 in: P. Baccini (ed.). *The Landfill: Reactor and Final Storage*. Springer-Verlag, Berlin, Germany.
- Meyer, J.S.**, G.L. Linder, M.D. Marcus and H.L. Bergman. 1984. Identifying problem compounds in complex organic mixtures: oil shale retort water examples. p. 343-371 in: K.E. Cowser (ed.). *Synthetic Fossil Fuel Technologies: Results of Health and Environmental Studies*. Butterworth Publishers, Boston, Massachusetts, USA.

### **Non-peer-reviewed Proceedings/Transactions:**

- DeForest, D.K., J.S. Meyer, R.W. Gensemer, J.W. Gorsuch and W.J. Adams. 2014. Protectiveness of copper aquatic life criteria/guidelines against olfactory impairment in fish: An international comparison. Society for Mining, Metallurgy, and Exploration (SME) Annual Meeting, Salt Lake City, UT. February 23-26. [Received 2014 Outstanding Paper Award in the SME Environmental Division]
- Meyer J.S., D.K. DeForest, R.W. Gensemer, J.W. Gorsuch and W.J. Adams. 2013. Aquatic life criteria are protective against copper-caused impairment of olfaction in salmonid fishes. Society for Mining, Metallurgy, and Exploration (SME) Annual Meeting, Denver, CO. February 24-27. [Received 2013 Outstanding Paper Award in the SME Environmental Division]
- Williamson, J., M.R. Pastorinho, J.F. Ranville, **J.S. Meyer**, R.C. Santore, A.C. Ryan, J.W. Gorsuch, E. Rogevich-Garman, C.E. Schlekot and R.L. Dwyer. 2013. Toxicity of metal mixtures to *Daphnia magna*: Comparison of laboratory and field investigations. pp. 499-505 in: A. Brown, L. Figueroa and C. Wolkersdorfer. *Reliable Mine Water Technology (Vol. I)*. Publication Printers, Denver, Colorado, USA.
- Bergman, H.L., **J.S. Meyer** and D.A. Sanchez. 1983. Assessing the effects of oil shale facilities on waste water quality: critique and alternatives. p. 110-117 in: K.K. Peterson (ed.). *Oil Shale: The Environmental Challenges III*. Colorado School of Mines Press, Golden, Colorado, USA.
- Bergman, H.L., G.M. DeGraeve, **J.S. Meyer**, M.D. Marcus and D.L. Geiger. 1981. Aquatic ecosystem hazard assessment of underground coal gasification process waters. p. 270-293 in: D.D. Mahlum, R.H. Gray and W.D. Felix (eds.). *Coal Conversion and the Environment: Chemical, Biomedical, and Ecological Considerations*. U.S. Department of Energy, CONF-801039.

### **Other Non-peer-reviewed Publications:**

- Meyer, J.S.**, W.J. Adams, D.K. DeForest, R.L. Dwyer, R.W. Gensemer, J.W. Gorsuch, R.K. Johnston, R.C. Santore and E. Van Genderen. 2012. Letter to the editor: Water chemistry matters in metal-toxicity papers. *Environmental Toxicology and Chemistry* 31:689-690.
- DeForest, D., **J. Meyer**, B. Adams, B. Dwyer, B. Gensemer, J. Gorsuch and E. Van Genderen. 2011. Importance of water chemistry in evaluating the olfactory effects of copper in salmonids. *SETAC Globe* 12 (9): <http://www.setac.org/globe/2011/september/water.html>.
- Clearwater, S.J., B.A. Morris and **J.S. Meyer**. 2005. Potential effects of coalbed natural gas product waters on surface waters in the Powder River Basin, Wyoming. *Wyoming State Geological Survey Public Information Circular* 43:18-19.
- Forbes, M.B., S.J. Clearwater, B.A. Morris and **J.S. Meyer**. 2005. Toxicity of coalbed natural gas product waters and receiving waters from the Powder River Basin, Wyoming. *Wyoming State Geological Survey Public Information Circular* 43:115-116.
- Meyer, J.S.**, M.B. Forbes and S.J. Clearwater. 2005. Policy decisions and management tools needed for an aquatic risk assessment of coalbed natural gas product waters. *Wyoming State Geological Survey Public Information Circular* 43:108-109.

### **Doctoral Dissertation:**

- Meyer, J.S.** 1986. Variability and bias in estimating cladoceran population growth rates. Ph.D. Dissertation. University of Wyoming, Laramie, Wyoming, USA.

### **Popular Articles:**

- Luoma, S.N., P.V. Hodson and **J.S. Meyer**. 2004. Beyond Adam's rib. *SETAC Globe* 5(1):38.
- Cardwell, R., **J. Meyer** and M. Reiley. 2012. Commemorating the accomplishments of Bill Adams and Kevin Brix. *SETAC Globe* 13(12): <http://ww2.setac.org/globe/2012/december/commemoration-accomplishments.html>.

### **Technical Reports:**

- DiToro, D.M., H.E. Allen, H.L. Bergman, **J.S. Meyer**, P.R. Paquin and R.C. Santore. 2000. The biotic ligand model: a computational approach for assessing the ecological effects of copper and other metals in aquatic systems. International Copper Association, Ltd., New York, New York, USA.
- Cors, C., D. Beltman, J. Lipton, D. Cacela, A. Maest, J. Marr, **J. Meyer** and R. MacRae. 1995. Use of geochemical modeling to evaluate acute toxicity injuries to salmonids: Panther Creek Basin, Blackbird Mine Site, Idaho. RCG/Hagler Bailly, Boulder, Colorado, USA (prepared for State of Idaho and National Oceanic and Atmospheric Administration).
- MacRae, R., **J.S. Meyer**, A. Maest, D. Beltman and C. Cors. 1995. Geochemical complexation studies: Blackbird Mine Natural Resource Damage Assessment, Idaho. RCG/Hagler Bailly, Boulder, Colorado, USA (prepared for National Oceanic and Atmospheric Administration).
- Marr, J., J. Lipton, D. Cacela, M. Barron, D. Beltman, C. Cors, K. LeJeune, A. Maest, T. Podrabsky, H. Bergman, J. Hansen, **J.S. Meyer** and R. MacRae. 1995. Fisheries toxicity injury studies: Blackbird Mine Site, Idaho. RCG/Hagler Bailly, Boulder, Colorado, USA (prepared for State of Idaho and National Oceanic and Atmospheric Administration).
- Meyer, J.S.**, D.D. Gulley and H.L. Bergman. 1993. Modeling the effect of fluctuating monochloramine concentrations on survival of freshwater fish. Technical Report No. EPRI TR-102057. Electric Power Research Institute, Palo Alto, California, USA.

- Meyer, J.S.**, A. Boelter and M. Crossey. 1988. Evaluation of ambient toxicity tests for detecting groundwater pollution entering streams and rivers: Final report. Wyoming Water Research Center, University of Wyoming, Laramie, Wyoming, USA.
- Crossey, M.J., **J.S. Meyer** and A. Boelter. 1986. Evaluation of ambient toxicity tests for detecting groundwater pollution entering streams and rivers: Year 1 progress report. Wyoming Water Research Center, University of Wyoming, Laramie, Wyoming, USA. 75 pp.
- Bub, K., M.D. Marcus, **J.S. Meyer**, M.K. Rothwell, M. Parker and L.B. Zeveloff. 1983. An assessment of the relationship among acidifying depositions, surface water acidification, and fish populations in North America. Volume 2: Bibliography. Research Report No. EPRI EA-3127. Electric Power Research Institute, Palo Alto, California, USA. 302 pp.

## **CONTRACTS AND GRANTS**

### **Funded Projects as PI:**

- 2006-2007 “Longitudinal Changes in Toxicity of Coal Bed Natural Gas Produced Water along Beaver Creek in the Powder River Basin, Wyoming”, funded by U.S. Department of Energy, \$129,444.
- 2005-2006 “THE POTENTIAL FOR SODIUM BICARBONATE TO ADVERSELY AFFECT AQUATIC LIFE UNDER EXPOSURE CONDITIONS SIMULATING THE TONGUE RIVER, MONTANA, USA”, FUNDED BY U.S. GEOLOGICAL SURVEY, \$15,000.**
- 2005 “ACUTE TOXICITY OF SALINE WETLAND WATERS TO CERIODAPHNIA DUBIA”, FUNDED BY U.S. FISH AND WILDLIFE SERVICE, \$10,000.**
- 2004-2005 “CHEMICAL ANALYSIS OF WATERFOWL STUDY SAMPLES”, FUNDED BY U.S. FISH AND WILDLIFE SERVICE, \$29,543.**
- 2004-2005 “CHEMICAL ANALYSIS OF FECAL SAMPLES”, FUNDED BY U.S. GEOLOGICAL SURVEY, \$12,348.**
- 2004-2005 “LEAD BIOACCUMULATION AND PATHWAY INTO RIPARIAN SONGBIRDS”, FUNDED BY U.S. FISH AND WILDLIFE SERVICE, \$26,455.**
- 2004 “COMPLETION OF AQUATIC METAL BIOAVAILABILITY BOOK”, FUNDED BY INTERNATIONAL LEAD ZINC RESEARCH ORGANIZATION, \$7,500.**
- 2003-2006 "A TEST OF THE BIOTIC LIGAND MODEL: FISH EXPOSED TO TIME-VARIABLE CONCENTRATIONS OF COPPER AND ZINC - YEARS 1, 2 AND 3", FUNDED BY U.S. ENVIRONMENTAL PROTECTION AGENCY (THROUGH CENTER FOR THE STUDY OF METALS IN THE ENVIRONMENT, UNIVERSITY OF DELAWARE), \$113,148.**
- 2002-2005 "Bioavailability and Effects of Ingested Metals on Aquatic Organisms", funded by Water Environment Research Foundation (through HydroQual Inc.), \$135,000.
- 2002-2003 "BIOACCUMULATION AND TOXICITY OF DIETBORNE PARTICULATE METALS TO BENTHIC INVERTEBRATES",**

**FUNDED BY U.S. ENVIRONMENTAL PROTECTION AGENCY  
(THROUGH CENTER FOR THE STUDY OF METALS IN THE  
ENVIRONMENT, UNIVERSITY OF DELAWARE), \$46,560.**

- 2002 "Acute and Chronic Toxicity of Waterborne and Dietborne Copper to Aquatic Invertebrates", funded by International Copper Association (through HydroQual, Inc.), \$50,000.
- 2001-2003 "Diel Cycling of Trace Metals in Biofilm", funded by U.S. Geological Survey, \$50,000.
- 2001-2002 "Accumulation of Metals in Aquatic Resources in Pritchard Creek, Idaho and Prickly Pear Creek, Montana: Two Watersheds with Abandoned Mine Lands", funded by U.S. Geological Survey, \$63,340.
- 2001 "Analytical Chemistry Support for Diet Studies", funded by Stratus Consulting Inc., \$27,787.
- 2000-2002 "Development of a Biotic Ligand Model for Zinc", funded by International Lead Zinc Research Organization (through HydroQual, Inc.), \$105,000.
- 2000 "Analytical Chemistry Support for Field Studies -- Fall 2000", funded by Stratus Consulting Inc., \$972.
- 2000 "Pheromonal Response in Brook Trout", funded by U.S. Forest Service, \$10,340.

**Funded Projects as PI (cont.):**

- 1999 "Bacterial Challenge to Lost River Suckers During Exposure to Elevated Ammonia and pH", funded by U.S. Fish and Wildlife Service (through U.S. Geological Survey), \$23,000.
- 1999 "Toxicity of Copper to Bull Trout", funded by State of Montana (through Stratus Consulting Inc.), \$23,853.
- 1998 "Analytical Chemistry Support for Toxicity Studies", funded by State of Montana (through Hagler Bailly Services, Inc.), \$1,833.
- 1997-1999 "Literature Review of the Bioavailability and Toxicity of Selected Metals in the Aquatic Environment Relative to Natural Water Chemistry", funded by International Copper Association, International Lead Zinc Research Organization, and Nickel Producers Environmental Research Association, \$77,821.
- 1997 "Analytical Chemistry Support for Toxicity Studies", funded by State of California (through Hagler Bailly Services, Inc.), \$27,100.
- 1996 "Geochemical Characterization and Modeling of Copper Availability in Surface Waters Draining the Iron Mountain Mine Site in Northern California", funded by U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration, California Department of Fish and Game, and State of California (through Hagler Bailly Consulting, Inc.), \$50,876.
- 1996 "Evaluation of the Relationship between Boron Concentrations and the Rainbow Trout Population in the Firehole River, Wyoming, USA: Historical Phase", funded by Borax Europe Limited and U.S. Borax Inc., \$14,871.
- 1996 "Analysis of Diets and Feces from Clark Fork River and Coeur d'Alene River Digestive Studies", funded by National Biological Service, \$5,000.
- 1995-1997 "Mechanisms of Toxicity in Fish Caused by Dietary Exposure to Metals" (Carlos Martínez del Río, CoPI; Theodore Kerstetter, CoI), funded by Electric Power Research Institute, \$54,962.

- 1995-1996 "Organic Complexes of Metals in Invertebrates Consumed by Fish in the Clark Fork River" (Aida Farag, CoI), funded by State of Montana Department of Justice, \$23,060.
- 1995-1996 "Organic Complexes of Metals in Invertebrates Consumed by Fish in the Coeur d'Alene River, Idaho", funded by National Biological Service, \$6,300.
- 1995 "Purchase of Liquid Chromatography Column to Quantify Chitin in Dietary Assimilation Efficiency Studies with Fish", funded by University of Wyoming, College of Arts and Sciences Basic Research Grants Program, \$2,000.
- 1993-1994 "Wastewater Utilization Program", funded by The City of Arcata, California, \$53,000 (at Humboldt State University).
- 1992-1993 "Wastewater Utilization Program", funded by The City of Arcata, California, \$42,000 (at Humboldt State University).
- 1987-1988 "Microbial Control of Phosphorus Release from Sediments", NATO Postdoctoral Fellowship, funded by U.S. National Science Foundation, \$20,400.

**Funded Projects as CoPI:**

- 2005-2006 "BIOACCUMULATION OF SELENIUM BY BRINE SHRIMP IN THE GREAT SALT LAKE: IMPLICATIONS FOR TOXICITY TO WATERFOWL AND SHOREBIRDS" (MARJORIE BROOKS, COPI), FUNDED BY KENNECOTT UTAH COPPER CORPORATION, \$94,650.**
- 2002-2005 "INFLUENCE OF CLIMATE-INDUCED ALTERATIONS IN DOC ON METAL TOXICITY AND UV RADIATION IN ROCKY MOUNTAIN STREAMS", FUNDED BY U.S. ENVIRONMENTAL PROTECTION AGENCY (THROUGH COLORADO STATE UNIVERSITY), \$29,073 (UW PORTION ONLY).**
- 1998-2002 "Application of Sediment Quality Criteria for Metals to a Montane Lotic Ecosystem: Field Validation during Reclamation of a Copper Mine Causing Acid Mine Drainage" (Jeffrey A. Lockwood and Richard W. Rockwell, CoPIs), funded by U.S. Environmental Protection Agency, \$449,558.
- 1998-2001 "Copper Bioavailability to Aquatic Invertebrates" (Harold L. Bergman, CoPI), funded by International Copper Association (through HydroQual, Inc.), \$184,000.
- 1998-1999 "Toxicity Testing with Bull Trout" (Harold L. Bergman, CoPI), funded by U.S. Environmental Protection Agency (through URS Greiner Woodward Clyde), \$109,842.
- 1997-1999 "Effects of Low and High Dissolved Oxygen and Elevated pH on Lost River Suckers" (Harold L. Bergman, CoPI), funded by U.S. Bureau of Reclamation (through U.S. Geological Survey), \$199,064.
- 1996-2000 "Bioavailability of Cadmium and Nickel to Fathead Minnows in the Presence of Dissolved Organic Matter" (Harold L. Bergman, CoPI), funded by U.S. Environmental Protection Agency (through the University of Delaware), \$165,000.
- 1996-1998 "Metal Bioavailability to Aquatic Biota" (Harold L. Bergman, CoPI), funded by International Copper Association (through HydroQual, Inc.), \$62,000.
- 1995-1996 "Evaluation of the Performance, Potential Loading Rates and Mechanisms of Removal of Petroleum Hydrocarbons and Antifreeze in Land Farming Plots at

- Jacobs Ranch Mine, Wyoming" (Patricia J.S. Colberg and Norbert Swoboda-Colberg, CoPIs), funded by Kerr-McGee Corporation, \$9,375.
- 1994-1995 "Fish Injury Assessment Studies, Blackbird Mine, Idaho" (Harold Bergman, CoPI), funded by National Oceanic and Atmospheric Administration, U.S. Department of Justice, U.S. Forest Service, and State of Idaho, \$323,985.
- 1994-1995 "Metal Residues in Fish from the Coeur d'Alene River, Idaho" (Stanley Anderson, CoPI), funded by National Biological Service, \$31,500.
- 1994-1995 "Evaluation of the Performance, Potential Loading Rates and Mechanisms of Removal of Petroleum Hydrocarbons and Antifreeze in Land Farming Plots at Jacobs Ranch Mine, Wyoming" (Patricia J.S. Colberg, CoPI), funded by University of Wyoming Office of Research, \$20,000.
- 1985-1987 "Evaluation of Ambient Toxicity Tests for Detecting Groundwater Pollution Entering Streams and Rivers" (Harold Bergman, PI), funded by U.S. Geological Survey, \$60,169.

#### **Funded Projects as CoI:**

- 2001 "Coal Bed Methane Product Water Acute Toxicity Testing" (Susan Clearwater, PI), funded by Wyoming Department of Environmental Quality, \$20,160.
- 1995-1998 "Biogeochemistry of Trace Elements in Aquatic Systems" (Steven Gloss, PI; Daniel Buttry, Patricia Colberg and Patrick Sullivan, CoPIs; Scott Bohle, Keith Carron, James Drever and Norbert Swoboda-Colberg, CoIs), funded by National Science Foundation EPSCoR Program and Wyoming Science, Technology and Energy Authority, \$2,400,000.

#### **Pending Projects as PI:**

#### **Pending Projects as CoPI:**

#### **Proposals Not Accepted as PI:**

- 2001-2003 "Incubator-activity Proposal: Biocomplexity at Multiple Levels of Biological Organization Along a Gradient of Extreme Water Quality in the Lakes of the Great Rift Valley of Africa" (Patrick J. Walsh and Chris M. Wood, Co-PIs), submitted to U.S. National Science Foundation, \$99,972.
- 1997-2000 "Effects of Ingestion of Metals-Contaminated Invertebrates on Digestive Physiology and Ultrastructure of Key Organs in Early-Life-Stage Brown Trout" (Carlos Martinez del Rio, CoPI; Aida Farag and Daniel F. Woodward, CoIs), submitted to U.S. Environmental Protection Agency, \$365,444.
- 1996-1999 "Bioavailability of Metals Leaching from Mine Sites: Effects of Binding Affinities of Dissolved Organic Matter and Suspended Particles, Microbial Processing, and Sunlight", submitted to U.S. Environmental Protection Agency, \$448,343.
- 1996 "Biogeochemistry of Metal Availability to Fish" (Steven Gloss, CoPI; Scott Bohle, Daniel Buttry, Keith Carron, Patricia Colberg, James Drever, Carrick Eggleston, Patrick Sullivan and Norbert Swoboda-Colberg, CoI's), submitted to Electric Power Research Institute, \$225,000.

1994 "Proposal to Purchase a Multi-element Atomic Absorption Spectrophotometer", submitted to University of Wyoming Major Equipment Committee, \$85,000.

**Proposals Not Accepted as CoPI or CoI:**

2001-2002 "Aquatic Toxicity of Coal Bed Methane Product Water: Determination of Suitability for Discharge to Surface Waters" (Kattah J. Reddy, PI; Susan J. Clearwater, Co-PI), submitted to University of Wyoming Water Research Program, \$94,738.

2000-2002 "Water, Ecosystems, and People: An Integrative, Science-based Approach and Tools for Citizen Decision-making in Urbanizing Mountain Watersheds" (Kenneth Kolm, John Emerick, Robert Hall, William Reiners, Phillippe Ross, Jason Shogren, CoPIs), submitted to U.S. Environmental Protection Agency, \$899,904 (UW share = \$599,999).

2000-2002 "Rapid and Selective Detection of Bioavailable Copper", (Robert Corcoran, PI; Keith Carron, CoPI), submitted to U.S. Environmental Protection Agency, \$227,848.

1996-1999 "Cellular Mechanisms of Metal Toxicity in Aquatic Organisms" (Donald DiBona, PI; Harold Bergman, CoI), submitted to U.S. Environmental Protection Agency, \$356,073.

1996-1998 "Phytoremediation of Toxic Metals" (John Nishio, PI; Harvey Doner, Maria Ghirardi, Akali Igbene, Michael Seibert, Peter Stahl, George Vance and Stephen Williams, CoIs), preproposal submitted to U.S. Department of Energy.

1995 "The Interaction of Aquatic Ecosystems and Economies in the Rocky Mountain West" (John Tschirhart, PI; Thomas Crocker and Jason Shogren, CoPIs), submitted to U.S. Environmental Protection Agency and National Science Foundation, \$345,965.

1995 "The Interaction of Aquatic Ecosystems and Economics in the Rocky Mountain West" (Thomas Crocker, PI; Jason Shogren and John Tschirhart, CoPIs), submitted to Wyoming Agricultural Experiment Station Competitive Grants Program, \$40,716.

1995 "Phytoremediation of Copper and Uranium Mines in the Rocky Mountain Region" (John Nishio, PI; Peter Stahl, George Vance and Steven Williams, CoIs), submitted to Wyoming EPSCoR Program, \$416,759.

## PROFESSIONAL AFFILIATIONS AND ACTIVITIES

**Scientific Organization Membership:**

Society of Environmental Toxicology and Chemistry

**Professional Society Offices:**

Rocky Mountain Association of Environmental Professionals:

- Member, Board of Directors: September 1983 - September 1984.

Society of Environmental Toxicology and Chemistry:

- President, Rocky Mountain Chapter: 2004-2005.
- Vice President, Rocky Mountain Chapter: 2003-2004.
- Member, Board of Directors, Rocky Mountain Chapter: 2002-2006.

- Member, Steering Committee of the Metals Interest Group: 2000-present.
- Member, Editorial Board for *Environmental Toxicology and Chemistry*: January 1997 - 2000.
- Member, Technical Committee: January 1983 - December 1986.

### **Professional Society Service:**

Rocky Mountain Association of Environmental Professionals:

- Organizer, Effluent Toxicity Testing Seminar. Denver, CO. August 10, 1984. (Cosponsored by the Society of Environmental Toxicology and Chemistry)

Society of Environmental Toxicology and Chemistry:

- Program Committee Co-chair for Special Symposia, Annual Meeting. Salt Lake City, UT. November 16-20, 2002.
- Steering Committee Member, Workshop on Toxicity of Dietborne Metals. Fairmont Hot Springs, BC, Canada. July 28 - 31, 2002.
- Session Co-chairperson, "Speciation and Bioavailability of Trace Elements." Third World Congress. Brighton, England. May 21-25, 2000.
- Co-organizer, Thirteenth Annual Meeting of the Rocky Mountain Chapter. Laramie, WY. April 6-7, 2000.
- Program Committee Co-chair for Platform Sessions, Fifteenth Annual Meeting. Denver, CO. October 30 - November 3, 1994.
- Session Chairperson, "Contaminant Effects on Populations and Communities." Fifth Annual Meeting. Arlington, VA. November 7, 1984.

### **External Tenure and Promotion Reviews:**

University of North Texas: Tenure for Dr. Barney Venables, Department of Biological Sciences -- November 2005.

University of Miami: Change from research to tenure track for Dr. Martin Grosell, Rosenstiel School of Marine and Atmospheric Science, University of Miami -- July 2005.

Humboldt State University: Tenure and promotion for Dr. Timothy Mulligan, Department of Fisheries -- August 1994.

### **Manuscript Refereeing for Scientific Journals:**

*Aquatic Sciences*: 2003 - 1 (reviewed twice); 1995 - 1; 1989 - 1; 1988 - 1.

*Aquatic Toxicology*: 2006 - 1; 2003 - 3; 2002 - 4.

*Archives of Environmental Contamination and Toxicology*: 2012 - 1; 2011 - 1; 2008 - 1; 2007 - 1; 2006 - 1; 2005 - 2; 2004 - 2.

*Bulletin of Environmental Contamination and Toxicology*: 2011 - 2 (incl. 1 twice-revised MS); 2008 - 1.

*Bulletin of the Geological Society of America*: 1996 - 1.

*Canadian Journal of Fisheries and Aquatic Sciences*: 2005 - 1; 1999 - 1; 1998 - 1.

*Canadian Journal of Zoology*: 2011 - 1.

*Chemosphere*: 2001 - 1; 2000 - 1; 1998 - 1.

*Comparative Biochemistry and Physiology*: 2014 - 1; 2009 - 1; 2005 - 1; 2003 - 1 (revised MS); 2002 - 1; 2001 - 1; 1997 - 1 (revised MS); 1996 - 1.

*Ecotoxicology and Environmental Safety*: 2014 - 1; 2012 - 1; 2010 - 1; 2007 - 1; 2006 - 1; 2005 - 1; 2004 - 1 (reviewed twice).

*Environmental Health Perspectives*: 1998 - 1.  
*Environmental Monitoring and Assessment*: 2005 - 1.  
*Environmental Science and Technology*: 2014 - 1; 2013 - 1; 2011 - 1 (incl. revised MS);  
2010 - 2 (incl. 1 revised MS); 2009 - 1; 2007 - 1; 2003 - 2; 2002 - 1; 2001 - 3; 2000 - 3;  
1999 - 1.  
*Environmental Toxicology and Chemistry*: 2014 - 2; 2013 - 1; 2012 - 1; 2011 - 2; 2010 - 3;  
2009 - 3; 2008 - 2; 2007 - 2; 2005 - 1; 2002 - 1; 2001 - 2; 2000 - 6; 1999 - 5; 1998 - 6;  
1997 - 6; 1995 - 6; 1994 - 3; 1993 - 2; 1992 - 1; 1982 - 1.  
*Journal of Environmental Quality*: 1998 - 1.  
*Journal of Experimental Biology*: 2003 - 1.  
*Journal of the North American Benthological Society*: 1986 - 1.  
*Journal of Wildlife Management*: 1996 - 2; 1995 - 1.  
*Limnology and Oceanography*: 2005 - 1 (reviewed twice); 1995 - 1.  
*Marine Geology*: 1995 - 1 (reviewed twice).  
*Science of the Total Environment*: 2013 - 1; 2011 - 1.  
*Wetlands*: 1999 - 2.

#### **Manuscript Refereeing for Scientific Books:**

*Coastal and Estuarine Risk Assessment* (SETAC Press): reviewed one chapter (Oct. 2000)  
*Environmental Contaminants in Biota: Interpreting Tissue Concentrations* (CRC Press):  
reviewed one chapter (Dec. 2008)  
*Homeostasis and Toxicology of Essential Metals (Fish Physiology Volume 31a)*: reviewed ne  
chapter (Aug. 2010)

#### **Grant Review Panels:**

Natural Environment Research Council (UK): May 2006 (1 proposal)  
DEPSCoR Program, University of Wyoming: Research Proposal Peer Reviews -- September  
2004 (1 proposal)  
National Environment Research Council (UK): Freshwater Program -- September 2000 (1  
proposal)  
National Science Foundation (USA): Life in Extreme Environments Program -- June 2000 (1  
proposal)  
Board of Regents, State of Louisiana: Research Competitiveness Subprogram -- January  
2000 (1 proposal)  
Water Resources Center, University of Delaware: Research Proposal Peer Reviews -- April  
1998 (1 proposal)  
Western Region's Water Resources Research Competitive Grants Program (administered  
through University of Wyoming Water Research Center): Research Proposal Peer  
Reviews -- May 1997 (1 proposal)  
Abandoned Mine Lands Research Program, University of Wyoming: Research Proposal  
Peer Reviews -- March 2000 (1 proposal), March 1997 (1 proposal), April 1996 (1  
proposal)  
University of Wyoming Water Research Center: Research Proposal Peer Review Panel (as  
non-UW participant). Laramie, WY. 30 April 1987.

### **Reviews for Scientific and Governmental Organizations:**

- U.S. Environmental Protection Agency: Member, Aquatic Life Criteria Consultative Panel of the Science Advisory Board (SAB) of the U.S. Environmental Protection Agency (USEPA). Washington, DC. First panel meeting -- 21 September 2005.
- U.S. Environmental Protection Agency: Member, Health and Ecological Effects Subcommittee (HEES) of the Advisory Council on Clean Air Compliance Analysis (ACCACA) of the Science Advisory Board (SAB) of the U.S. Environmental Protection Agency (USEPA). Washington, DC. First panel meeting -- 29-30 January 1998. Interim reviews until 2002.
- Environment Canada: Member, Environmental Resource Group for the Assessment of Chloramine under the Canadian Environmental Protection Act. Document review and advice to be provided through panel meetings and teleconference calls from October 1996 through 1999. Workshops attended -- 7-8 March 1997 in Ottawa, Ontario; 28-29 May 1998 and 5 March 1999 in Vancouver, British Columbia.
- U.S. Environmental Protection Agency: Member, Advisory Council on Clean Air Compliance Analysis Physical Effects Review Subcommittee (ACCACAPERS, formerly CAACACPERS) of the Science Advisory Board (SAB) of the U.S. Environmental Protection Agency (USEPA). Washington, DC. Four panel meetings -- October 18 and November 15-16, 1994; April 12 and May 18, 1995; and 4 June 1996. Additionally, documents were reviewed outside of panel meetings from 1994 to 1997.
- U.S. Department of Energy: Review of documents addressing damages and benefits of various fuel cycles. Washington, DC and Seattle, WA. Four panel meetings -- November 17-18, 1992; January 21-22, March 30-April 1 and June 16, 1993.
- Electric Power Research Institute: Review of report titled "Physiological, Toxicological and Population Responses of Smallmouth Bass to Acidification." January, 1991.
- Ontario Ministry of the Environment: Review of document titled "Scientific Criteria Document for Standard Development: Benzene and Substituted Benzenes in the Aquatic Environment." April, 1985.

### **Advisory Panels and Committees:**

- U.S. Borax: Member, Boron Ecotoxicology Advisory Group, U.S. Borax, Valencia, CA. Term: March 2002 - present. Meetings: 1-2 July 2002, 16 November 2002, 29-31 October 2004.
- Electric Power Research Institute: Member, Water Toxics Advisory Committee, Land and Water Quality Studies Program, Environment Division, Electric Power Research Institute, Palo Alto, CA. Term: March 1993 - December 1996. Meetings: 18-19 March 1993; 8-9 November 1994.

### **Invited Workshop or Symposium Participant:**

- Workshop on Modeling of Metal Mixtures. Convened by the International Copper Association, Ltd., the International Zinc Association, and the Nickel Producers Environmental Research Association. Brussels, Belgium. May 17-19, 2012.
- Workshop on Metal Mixtures. Convened by the International Copper Association, Ltd. and the International Zinc Association. Toronto, Ontario, Canada. 27-28 June 2011.

- Symposium on Prospective and Retrospective Environmental Risk Assessment of Mixtures: Moving from Research to Regulation. Third SETAC Europe Special Science Symposium. Brussels, Belgium. 2-3 February 2011.
- Workshop on Tissue Residue Approaches. Organized by the Society of Environmental Toxicology and Chemistry. Leavenworth, WA. 7-12 June 2007.
- Workshop on Ecological Risk Assessment. Convened by the Science Advisory Board of the U.S. Environmental Protection Agency. Washington, DC. 7-8 February 2006.
- Workshop on Science for Valuation of EPA's Ecological Protection Decisions and Programs. Convened by the Science Advisory Board of the U.S. Environmental Protection Agency. Washington, DC. 13-14 December 2005.
- Workshop on Dietborne Metal Toxicity to Aquatic Organisms. Organized by the Society of Environmental Toxicology and Chemistry (sponsored by Eastman Kodak Company, Electric Power Research Institute, Kennecott Utah Copper Corporation, U.S. Environmental Protection Agency, Environment Canada, Natural Resources Canada). Fairmont Hot Springs, British Columbia, Canada. 28-31 July 2002.
- Workshop on the Development of a Marine Biotic Ligand Model. Sponsored by the International Copper Association and Woods Hole Oceanographic Institution. Woods Hole, MA. 23-24 July 2001.
- Second Colloquium on Metals in the Environment. Sponsored by the Electric Power Research Institute, the International Copper Association, and Eastman Kodak Company. Washington, DC. 28-30 January 2001.
- First International James M. McKim Species Extrapolation Workshop. Organized by the U.S. Environmental Protection Agency. Duluth, MN. 28 October 2000.
- Workshop on Effects of Dietary Metal Uptake by Fish and Other Aquatic Organisms. Organized and sponsored by the U.S. Environmental Protection Agency. Duluth, MN. 1-2 March 2000.
- Workshop on Re-evaluation of the State of the Science for Water Quality Criteria Development. Organized by the Society of Environmental Toxicology and Chemistry (sponsored by Eastman Kodak Company, Electric Power Research Institute, Kennecott Utah Copper Corporation, and U.S. Environmental Protection Agency). Anaconda, MT. 25-30 June 1998.
- Workshop on Reassessment of Metals Criteria for Aquatic Life Protection: Priorities for Research and Implementation. Organized by the Society of Environmental Toxicology and Chemistry (sponsored by the Electric Power Research Institute, International Copper Association, and others). Pensacola, FL. 10-14 February 1996.
- Workshop on Bioavailability of Organic Contaminants in Soils and Sediments. Sponsored by the U.S. Office of Naval Research, U.S. Air Force Office of Scientific Research, and U.S. Army Research Office. Monterey, CA. 9-12 April 1995.

### **Invited Workshop or Symposium Participant (cont.):**

Workshop on Aquatic Life Criteria for Metals. Sponsored by the U.S. Environmental Protection Agency. Annapolis, MD. 25-29 January 1993.

Workshop on A Mechanistic Understanding of Bioavailability: Physical-chemical Interactions. Chair of session on dynamic environmental factors. Sponsored by the U.S. Environmental Protection Agency, and 12 other government agencies and private companies. Pellston, MI. 18-22 August 1992.

Workshop to Select Test Systems for Ecological Assessment and Monitoring. Sponsored by the U.S. Army Construction Engineering Research Laboratory. Monticello, IL. 19-22 January 1986.

Workshop on Hazard Assessment for Complex Effluents. Sponsored by the Electric Power Research Institute, the American Petroleum Institute, the Chemical Manufacturers Association, and the U.S. Environmental Protection Agency. Cody, WY. 22-27 August 1982.

### **HONORS AND AWARDS**

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| 2003      | Extraordinary Merit in Advising, College of Arts and Sciences, University of Wyoming, Laramie, WY |
| 2003      | Excellence in Advising Award, University of Wyoming, Laramie, WY                                  |
| 2002      | Presidential Citation for Exemplary Service, Society of Environmental Toxicology and Chemistry    |
| 2002      | Excellence in Advising Award, University of Wyoming, Laramie, WY                                  |
| 2000      | Extraordinary Merit in Research, College of Arts and Sciences, University of Wyoming, Laramie, WY |
| 1999      | Extraordinary Merit in Research, College of Arts and Sciences, University of Wyoming, Laramie, WY |
| 1998      | Excellence in Advising Award, University of Wyoming, Laramie, WY                                  |
| 1997      | Excellence in Advising Award, University of Wyoming, Laramie, WY                                  |
| 1987-1988 | NATO Postdoctoral Fellowship, U.S. National Science Foundation                                    |
| 1984      | Kuehn Independent Study Award, University of Wyoming, Laramie, WY                                 |
| 1970-1973 | Procter & Gamble Undergraduate Chemical Engineering Scholarship, Lehigh University, Bethlehem, PA |

### **PAPERS PRESENTED/SYMPOSIA/INVITED LECTURES/PROFESSIONAL MEETINGS/WORKSHOPS**

#### **Abstracts of Presentations at Scientific Meetings:**

- Gensemer, R.W., C.A. Claytor, J. Gondek, D.K. DeForest, **J.S. Meyer** and J.W. Gorsuch. 2015. Regulatory implementation of the copper biotic ligand model for aquatic life protection: What have we learned and how are we doing? Submitted for presentation at the 2015 Water Environment Federation Technical Exhibition and Conference, Chicago, IL. September 26-30.
- Anderson, P.D., **J.S. Meyer** and M.A. Beauchemin. 2014. Development of site-specific uptake factors for metals. Presented at the Twenty-fourth Annual Meeting of the Society of Environmental Toxicology and Chemistry – Europe, Basel, Switzerland, May 11-15.

- DeForest, D.K., **J.S. Meyer**, R.W. Gensemer, J.W. Gorsuch and W.J. Adams. 2014. Protectiveness of copper aquatic life criteria/guidelines against olfactory impairment in fish: An international comparison. Presented at the 2014 Annual Meeting of the Society for Mining, Metallurgy, and Exploration, Salt Lake City, UT, February 23-26.
- DeForest, D.K., **J.S. Meyer**, R.W. Gensemer, J.W. Gorsuch and W.J. Adams. 2014. Protectiveness of copper aquatic life criteria/guidelines against olfactory impairment in fish: An international comparison. Presented at the Thirty-fifth Annual Meeting of the Society of Environmental Toxicology and Chemistry, Vancouver, BC, November 9-13.
- DeForest, D.K., **J.S. Meyer**, R.W. Gensemer, J.W. Gorsuch, B.K. Shephard, J.M. Zodrow and W.J. Adams. 2014. Protectiveness of aquatic life criteria for copper against olfactory and behavioral effects in freshwater and saltwater fish. Presented at the 2014 Salish Sea Ecosystem Conference, Seattle, WA, April 30 - May 2.
- Dwyer, R.L., **J.S. Meyer** and J.W. Gorsuch. 2014. Misapplication of generic hazard-classification schemes for versatile, sustainable building materials: Copper as an example. Presented at the Twenty-fourth Annual Meeting of the Society of Environmental Toxicology and Chemistry – Europe, Basel, Switzerland, May 11-15.
- Ebeling, K.A., J.F. Ranville, E.M. Traudt, S.A. Smith and **J.S. Meyer**. 2015. *D. magna* metal toxicity in a mining impacted stream: Comparing results in simulated and field-collected waters. To be presented at the 249<sup>th</sup> National Meeting of the American Chemical Society, Denver, CO, 22-26 March.
- Farley, K.J. and **J.S. Meyer**. 2014. Evaluation of various approaches for modeling metal mixture toxicity. Presented at the Thirty-fifth Annual Meeting of the Society of Environmental Toxicology and Chemistry, Vancouver, BC, November 9-13.
- Gensemer, R.W., C.A. Claytor, S.D. Baker, D.K. DeForest, **J.S. Meyer** and J.W. Gorsuch. 2014. Regulatory implementation of the copper BLM: What have we learned and how are we doing? Presented at the Thirty-fifth Annual Meeting of the Society of Environmental Toxicology and Chemistry, Vancouver, BC, November 9-13.
- Meyer, J.S.**, D.K. DeForest, R.W. Gensemer, J.W. Gorsuch and W.J. Adams. 2014. Protectiveness of copper aquatic life criteria/guidelines against olfactory impairment in fish: An international comparison. Presented at the Twenty-fourth Annual Meeting of the Society of Environmental Toxicology and Chemistry – Europe, Basel, Switzerland, May 11-15.

#### **Abstracts of Presentations at Scientific Meetings (cont.):**

- Meyer, J.S.** and K.J. Farley. 2014. A randomization test for statistical significance of non-additive toxicity in metal mixtures. Presented at the Twenty-fourth Annual Meeting of the Society of Environmental Toxicology and Chemistry – Europe, Basel, Switzerland, May 11-15.
- Meyer, J.S.**, A.S. Fowler and J.R. Loper. 2014. Reference envelopes and sediment toxicity: The bottom line? Presented at the Thirty-fifth Annual Meeting of the Society of Environmental Toxicology and Chemistry, Vancouver, BC, November 9-13.
- Meyer, J.S.** and Y. Iwasaki. 2014. Statistical tests for additivity of toxicity in metal mixtures. Presented at the Thirty-fifth Annual Meeting of the Society of Environmental Toxicology and Chemistry, Vancouver, BC, November 9-13.
- Pastorinho, M.R., J.F. Ranville, J. Williamson and **J.S. Meyer**. 2014. Death in the fast lane: Ion imbalance in *Daphnia magna* exposed in situ in acid mine drainage-impacted waters.

- Presented at the Twenty-fourth Annual Meeting of the Society of Environmental Toxicology and Chemistry – Europe, Basel, Switzerland, May 11-15.
- Smith, S.A., E.M. Traudt, K.A. Ebeling, J.F. Ranville and **J.S. Meyer**. 2015. Effect of *Daphnia magna* age on the variability of cadmium toxicity. To be presented at the 249<sup>th</sup> National Meeting of the American Chemical Society, Denver, CO, 22-26 March.
- Traudt, E.M., J.F. Ranville, S.A. Smith, K.A. Ebeling and **J.S. Meyer**. 2015. Toxicity of binary and ternary mixtures of nickel, copper, zinc and cadmium to *Daphnia magna*. To be presented at the 249<sup>th</sup> National Meeting of the American Chemical Society, Denver, CO, 22-26 March.
- Traudt, E.M., J.F. Ranville, J.L. Williamson, S.A. Smith and **J.S. Meyer**. 2014. Toxicity of ternary mixtures of nickel, copper, zinc and cadmium to *Daphnia magna*. Presented at the Twenty-seventh Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry, Denver, CO, USA, April 17-18.
- Traudt, E.M., J.F. Ranville, J.L. Williamson, S.A. Smith, M.R. Pastorinho and **J.S. Meyer**. 2014. Toxicity of binary mixtures of nickel, copper, cadmium and zinc to *Daphnia magna*. Presented at the Twenty-fourth Annual Meeting of the Society of Environmental Toxicology and Chemistry – Europe, Basel, Switzerland, May 11-15.
- Traudt, E., J.F. Ranville, J. Williamson, S. Smith and **J.S. Meyer**. 2014. Toxicity of ternary mixtures of nickel, copper, zinc and cadmium to *Daphnia magna*. Presented at the Thirty-fifth Annual Meeting of the Society of Environmental Toxicology and Chemistry, Vancouver, BC, November 9-13.
- Williamson, J.L., P. Cadmus, M.R. Pastorinho, E. Traudt, W.H. Clements, **J.S. Meyer** and J.F. Ranville. 2014. A multidisciplinary study on the influence of biogeochemistry and metal bioavailability on the health and potential recovery of a stream affected by acid mine drainage. Presented at the 2014 Annual Meeting of the National Institute of Environmental Health Sciences Superfund Research program, San José, CA, November 12-14.
- Williamson, J.L., M.R. Pastorinho, J.F. Ranville, J.S. Meyer and W.H. Clements. 2015. Methods for simulating the restoration and recovery of acid mine drainage-impacted stream sediment. To be presented at the 249<sup>th</sup> National Meeting of the American Chemical Society, Denver, CO, 22-26 March.

#### **Abstracts of Presentations at Scientific Meetings (cont.):**

- Williamson, J.L., J.F. Ranville, **J.S. Meyer**, P. Cadmus and W. Clements. 2014. Development of in-situ methods for investigating recovery of acid mine drainage contaminated sediments. Presented at the Twenty-seventh Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry, Denver, CO, USA, April 17-18.
- Williamson, J.L., J.F. Ranville, **J.S. Meyer** and R. Pastorinho. 2014. Methodological development for geochemical analysis of AMD-contaminated stream sediments, with implications for recovery. Presented at the Thirty-fifth Annual Meeting of the Society of Environmental Toxicology and Chemistry, Vancouver, BC, November 9-13.
- DeForest, D.K. and **J.S. Meyer**. 2013. Dietborne-metal toxicity to aquatic organisms: A literature review. Presented at the Twenty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry – Europe, Glasgow, Scotland, May 12-16.
- Farley, K.J. and **J.S. Meyer**. 2013. A comparative evaluation of modeling approaches for metal mixture toxicity. Presented at the Thirty-fourth Annual Meeting of the Society of Environmental Toxicology and Chemistry, Nashville, TN, November 17-21.

- Jones, D.S., S.J. Young, A.R. Stojak, N.L. Bonnevie, L.W. Fontenot, B. Fulton, C.B. Meyer, J.S. Meyer, D. Buys, D.K. Rigg, T.H. Schlekat and N. Carriker. 2013. Ecological risk analysis of residual coal ash and associated metals and metalloids in a river reservoir system. Presented at the Thirty-fourth Annual Meeting of the Society of Environmental Toxicology and Chemistry, Nashville, TN, November 17-21.
- Meyer, C.B., **J.S. Meyer**, R. Hummell and W.J. Adams. 2013. Effects of metal mixtures on fish and benthic macroinvertebrate populations in a mining-impacted stream: Railroad Creek, Washington, USA. Presented at the Twenty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry – Europe, Glasgow, Scotland, May 12-16.
- Meyer, J.S.**, B. Anthony, D. Ludwig, H. Douglas and A.S. Fowler. 2013. Anniston PCB Site: Implications of sediment toxicity-testing results to an ecological risk assessment. Presented at the Seventh International Conference on Remediation of Contaminated Sediments, Dallas, TX, February 4-7.
- Meyer, J.S.** and D.K. DeForest. 2013. Dietborne-metal toxicity to aquatic organisms: A literature review. Presented at the Thirty-fourth Annual Meeting of the Society of Environmental Toxicology and Chemistry, Nashville, TN, November 17-21.
- Meyer, J.S.**, D.K. DeForest, R.W. Gensemer, J.W. Gorsuch and W.J. Adams. 2013. Aquatic life criteria are protective against copper-caused impairment of olfaction in salmonid fishes. Presented at the 2013 Annual Meeting of the Society for Mining, Metallurgy, and Exploration, Denver, CO, February 24-27.
- Meyer, J.S.**, D.K. DeForest, R.W. Gensemer, B.K. Shephard, J.M. Zodrow, J.W. Gorsuch, W.J. Adams. 2013. U.S. EPA biotic ligand model-based aquatic life criteria are protective against copper-caused impairment of olfaction in salmonid fishes. Presented at the Twenty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry – Europe, Glasgow, Scotland, May 12-16.
- Meyer, J.S.**, J.W. Gorsuch and R.L. Dwyer. 2013. Misapplication of generic hazard classification schemes for versatile building materials: Copper as an example. Presented at the Thirty-fourth Annual Meeting of the Society of Environmental Toxicology and Chemistry, Nashville, TN, November 17-21.

#### **Abstracts of Presentations at Scientific Meetings (cont.):**

- Meyer, J.S.**, J.F. Ranville, R.C. Santore, A.C. Ryan, J.W. Gorsuch, W.J. Adams, E. Rogevich-Garman, C.E. Schlekat, R.L. Dwyer and K. Delbeke. 2013. Toxicity of metal mixtures to *Daphnia magna*: Competitive binding to dissolved organic matter and biotic ligand can explain non-additive interactions. Presented at the Twenty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry – Europe, Glasgow, Scotland, May 12-16.
- Ranville, J.F., J. Williamson, **J.S. Meyer**, R.C. Santore, A.C. Ryan, J.W. Gorsuch, E. Rogevich-Garman, C.E. Schlekat and R.L. Dwyer. 2013. Toxicity of metal mixtures to *Daphnia magna*: Comparison of laboratory and field investigations. Presented at the 2013 Mine Water Conference of the International Mine Water Association, Golden, CO, August 5-9.
- Ryan, A.C., R.C. Santore, **J.S. Meyer** and J.F. Ranville. 2013. Modeling the toxicity of metal mixtures: A bioavailability-based approach using the Biotic Ligand Model framework. Presented at the Twenty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry – Europe, Glasgow, Scotland, May 12-16.

- Traudt, E.M., J.F. Ranville, J.L. Williamson, S.A. Smith, M.R. Pastorinho and **J.S. Meyer**. 2013. Toxicity of binary mixtures of nickel, copper, and cadmium to *Daphnia magna*. Presented at the Twenty-sixth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry, Denver, CO, April 18-19.
- Traudt, E.M., J.F. Ranville, J.L. Williamson, S.A. Smith, M.R. Pastorinho and **J.S. Meyer**. 2013. Toxicity of binary mixtures of nickel, copper, cadmium and zinc to *Daphnia magna*. Presented at the Thirty-fourth Annual Meeting of the Society of Environmental Toxicology and Chemistry, Nashville, TN, November 17-21.
- Williamson, J.L., J.F. Ranville, **J.S. Meyer**, M.R. Pastorinho and E. Traudt. 2013. Geochemical and aquatic toxicological analysis of the mine waste impacted North Fork of Clear Creek. Presented at the Twenty-sixth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry, Denver, CO, April 18-19.
- Williamson, J.L., J.F. Ranville, E.M. Traudt, **J.S. Meyer** and M.R. Pastorinho. 2013. Aquatic geochemical analysis and the toxicological implications of acid mine drainage inputs into the North Fork of Clear Creek. Presented at the Thirty-fourth Annual Meeting of the Society of Environmental Toxicology and Chemistry, Nashville, TN, November 17-21.
- Beauchemin, M., P. Anderson, N. Bonnevie, **J.S. Meyer** and D. Chin. 2012. Using site-specific data to derive clean-up levels that accurately reflect toxicity from creosote-based PAHs. Presented at the North Atlantic Chapter Meeting of SETAC, Rhode Island, June.
- DeForest, D.K., R.W. Gensemer, J.W. Gorsuch, **J.S. Meyer**, R.C. Santore, B.K. Shephard and J. Zodrow. 2012. Effects of copper on the olfactory and behavioral responses of saltwater fish, and the protectiveness of regulatory aquatic life criteria using the biotic ligand model. Presented at the Sixteenth International Congress of Marine Corrosion and Fouling, Seattle, WA, June 24-28.
- DeForest, D.K., R.W. Gensemer, J.W. Gorsuch, **J.S. Meyer**, R.C. Santore, B.K. Shephard and J. Zodrow. 2012. Effects of copper on olfactory and behavioral responses of saltwater fish and the protectiveness of biotic ligand model-based aquatic life criteria. Presented at the Thirty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry, Long Beach, CA, November 11-15.

#### **Abstracts of Presentations at Scientific Meetings (cont.):**

- DeForest, **J.S. Meyer** and J.W. Gorsuch. 2012. A unified saltwater-freshwater biotic ligand model of copper-induced olfactory impairment to salmonid fishes. Presented at the One Hundred Forty-second Annual Meeting of the American Fisheries Society, St. Paul, MN, August 19-23.
- Fulton, B.A., E.M. Schlenker, D.B. Edge, A.M. Thatcher and **J.S. Meyer**. 2012. Water-effect ratio model to support site-specific copper criteria across multiple drainages in an arid landscape. Presented at the Twenty-fifth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry, Fort Collins, CO, April 19-20.
- Fulton, B.A., D.B. Edge, A.M. Thatcher and **J.S. Meyer**. 2012. Water effect ratio model to support site-specific copper criteria across multiple drainages in an arid landscape. Presented at the Thirty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry, Long Beach, CA, November 11-15.
- Gensemer, R.W., D.K. DeForest, J.W. Gorsuch and **J.S. Meyer**. 2012. Regulatory implications of olfactory and behavioral effects of copper on fish. Presented at the Sixteenth International Congress of Marine Corrosion and Fouling, Seattle, WA, June 24-28.

- Gensemer, R.W., D.K. DeForest, J.W. Gorsuch and **J.S. Meyer**. 2012. Regulatory implications of chemosensory and behavioral effects of anthropogenic chemicals to fish. Presented at the Thirty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry, Long Beach, CA, November 11-15.
- Jones, D., M. Beauchemin, N. Bonnevie, D. Buys, L. Fontenot, B. Fulton, C. Meyer, **J. Meyer**, D. Rigg, T. Schlekat, A.R. Stojak, M. Wacksman; S. Young and N. Carriker. 2012. Ecological risk assessment for Phase 3 of the TVA Kingston Ash Recovery Project; Roane County, TN. Presented at the Thirty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry, Long Beach, CA, November 11-15.
- Meyer, J.S.**, D.K. DeForest and J.W. Gorsuch. 2012. A unified freshwater-saltwater biotic ligand model of Cu-induced olfactory impairment to salmonid fishes. Presented at the Twenty-fifth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry, Fort Collins, CO, April 19-20.
- Meyer, J.S.**, D.K. DeForest and J.W. Gorsuch. 2012. A unified saltwater-freshwater biotic ligand model to predict the olfactory effects of copper to salmonid fishes. Presented at the Sixteenth International Congress of Marine Corrosion and Fouling, Seattle, WA, June 24-28.
- Meyer, J.S.**, D.K. DeForest and J.W. Gorsuch. 2012. A unified freshwater-saltwater biotic ligand model to predict olfactory effects of copper to salmonid fishes. Presented at the Thirty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry, Long Beach, CA, November 11-15.
- Meyer, J.S.** and G.G. Pyle. 2012. Summary and synthesis of chemosensory/behavior symposium. Presented at the One Hundred Forty-second Annual Meeting of the American Fisheries Society, St. Paul, MN, August 19-23.
- Meyer, J.S.**, J.F. Ranville, R.C. Santore, A.C. Ryan, J.W. Gorsuch and W.J. Adams. 2012. Toxicity of metal mixtures to *Daphnia magna*: Implications for a multi-metal, multi-site biotic ligand model. Presented at the Twenty-second Annual Meeting of the Society of Environmental Toxicology and Chemistry – Europe, Berlin, Germany, May 20-24.

**Abstracts of Presentations at Scientific Meetings (cont.):**

- Ryan, A.C., R.C. Santore, **J.S. Meyer** and J.F. Ranville. 2012. A bioavailability-based approach to modeling metal mixtures: Part 1. Model framework and conceptual considerations. Presented at the Thirty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry, Long Beach, CA, November 11-15.
- Santore, R.C., A.C. Ryan, **J.S. Meyer** and J.F. Ranville. 2012. A bioavailability-based approach to modeling metal mixtures: Part 2. Model application. Presented at the Thirty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry, Long Beach, CA, November 11-15.
- Schlekat, T.H., **J.S. Meyer**, C.B. Meyer and D. Jones. 2012. Incorporating bioaccessibility in estimating metal toxicity from incidentally ingested soil. Presented at the Thirty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry, Long Beach, CA, November 11-15.
- Williamson, J.L., J.F. Ranville, K. Dahl, S. Smith, N. Albuquerque and **J.S. Meyer**. 2012. Geochemical characteristics of the mine-impacted North Fork of Clear Creek and implications for stream recovery. Presented at the Thirty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry, Long Beach, CA, November 11-15.

- Adams, W.J. and **J.S. Meyer**. 2011. Avoidance of salmonids to copper: Does the BLM-based water quality criteria provide protection? Presented at the 141<sup>st</sup> Annual Meeting of the American Fisheries Society. Seattle, WA. 4-8 September 2011.
- Anderson, P., T. Iannuzzi, **J. Meyer** and J. Patacity. 2011. Absence of predicted toxicity from creosote-derived PAH in sediments: A meta-analysis. Presented at the Battelle Sixth International Conference on Remediation of Contaminated Sediments. New Orleans, LA. 7-10 February.
- Anthony, B., **Meyer, J.S.**, D. Ludwig, H. Douglas, M.J. Shivell and A.S. Fowler. 2011. Anniston PCB Site: Implications of field and laboratory bioaccumulation results to an ecological risk assessment. Presented at the Thirty-second Annual Meeting of the Society of Environmental Toxicology and Chemistry. Boston, MA. 13-17 November.
- Meyer, C. and **J.S. Meyer**. 2011. Implications of life history and model choice on bird population recovery estimates after pulsed contaminant exposure. Presented at the Thirty-second Annual Meeting of the Society of Environmental Toxicology and Chemistry. Boston, MA. 13-17 November.
- Meyer, J.S.**, B. Anthony, D. Ludwig, H. Douglas and A.S. Fowler. 2011. Anniston PCB Site: Implications of sediment toxicity-testing results to an ecological risk assessment. Presented at the Thirty-second Annual Meeting of the Society of Environmental Toxicology and Chemistry. Boston, MA. 13-17 November.
- Meyer, J.S.**, J.F. Ranville, M. Pontasch, R.C. Santore, J.W. Gorsuch and W.J. Adams. 2011. Toxicity of metal mixtures to *Daphnia magna*: A test of a multi-metal, multi-site biotic ligand model using Cu and Zn. Presented at the Twenty-first Annual Meeting of the Society of Environmental Toxicology and Chemistry – Europe. Milan, Italy. 15-19 May.
- Meyer, J.S.**, J.F. Ranville, M. Pontasch, R.C. Santore, J.W. Gorsuch and W.J. Adams. 2011. Toxicity of Cu-Zn mixtures to *Daphnia magna*: Test of a multi-metal, multi-site biotic ligand model. Presented at the Twenty-fourth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Denver, CO. 19-20 May.

**Abstracts of Presentations at Scientific Meetings (cont.):**

- Meyer, J.S.**, J.F. Ranville, M. Pontasch, R.C. Santore, A. Ryan, J.W. Gorsuch and W.J. Adams. 2011. Toxicity of metal mixtures to *Daphnia magna*: Implications for a multi-metal, multi-site biotic ligand model. Presented at the Thirty-second Annual Meeting of the Society of Environmental Toxicology and Chemistry. Boston, MA. 13-17 November.
- Meyer, J.S.**, J.F. Ranville, R.C. Santore, M. Pontasch, J.W. Gorsuch and W.J. Adams. 2011. Toxicity of metal mixtures to *Daphnia magna*: A multi-metal, multi-site biotic ligand model can reconcile apparent synergisms/antagonisms to facilitate regulatory implementation. Presented at the Third Science Symposium of the Society of Environmental Toxicology and Chemistry – Europe “Prospective and Retrospective Environmental Risk Assessment of Mixtures: moving from Research to Regulation”. Brussels, Belgium. 2-3 February.
- Meyer, C., A. Francisco, K. Jenkins and **J. Meyer**. 2010. A tiered approach to applying population modeling when assessing ecological risk at contaminated sites in the U.S. and Europe. Presented at the Thirty-first Annual Meeting of the Society of Environmental Toxicology and Chemistry. Portland, OR. 7-11 November.
- Meyer, J.S.** and W.J. Adams. 2010. Protectiveness of hardness-based and BLM-based water quality criteria for copper against olfactory impairment in fish. Presented at the Thirty-first

Annual Meeting of the Society of Environmental Toxicology and Chemistry. Portland, OR. 7-11 November.

**Meyer, J.S.** and W.J. Adams. 2008. BLM-based water quality criteria are protective for copper avoidance and olfactory impairment in salmonid fish. Presented at the Twenty-ninth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Tampa, FL. 16-20 November.

Warne, M.St.J., S. Dyer, H. Leslie, **J. Meyer** and B. Escher. 2008. Integration of the tissue residue approach and mixture toxicology. Presented at the Fifth World Congress of the Society of Environmental Toxicology and Chemistry, Sydney, Australia. 3-7 August.

**Meyer, J.S.** 2008. The Rio de los Patos, Argentina: Rainbow trout in a high-elevation, high-boron desert stream. Presented at the Twenty-first Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry, Golden, CO. 17-18 April.

Adams, W.J., R. Blust, U. Borgmann, D. DeForest, A. Green, J. McGeer, **J. Meyer**, P. Paquin, P. Rainbow, and C. Wood. 2007. Metal tissue residue dose metrics for assessing effects in aquatic organisms. Presented at the Twenty-eighth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Milwaukee, WI. 11-15 November.

Johnson, L.A., C.J. Boese, B.A. Morris and **J.S. Meyer**. 2007. Longitudinal changes in potential toxicity of coal bed natural gas produced water along Beaver Creek in the Powder River Basin, Wyoming. Presented at the Twenty-eighth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Milwaukee, WI. 11-15 November.

Meyer, C.B., **J.S. Meyer**, P. Goodrum and A. Thatcher. 2007. Toxicity of acid metalliferous tailing ponds to migrating waterfowl. Presented at the Twenty-eighth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Milwaukee, WI. 11-15 November.

**Meyer, J.S.**, R.C. Santore and W.J. Adams. 2007. A quantitative model of metal-mixture toxicity to aquatic organisms. Presented at the Twenty-eighth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Milwaukee, WI. 11-15 November.

#### **Abstracts of Presentations at Scientific Meetings (cont.):**

Clements, W.H., R. Zuellig, D. Kashian, M. Brooks and **J. Meyer**. 2006. The influence of climate-induced alterations in dissolved organic matter on metal bioavailability and UV-B radiation in Rocky Mountain streams. Presented at the Twenty-seventh Annual Meeting of the Society of Environmental Toxicology and Chemistry. Montreal, Québec, Canada. 5-9 November.

**Meyer, J.S.**, C.J. Boese and J.M. Morris. 2006. Adapting the biotic ligand model to predict toxicity of time-variable Cu exposures to fathead minnows. Presented at the Twenty-seventh Annual Meeting of the Society of Environmental Toxicology and Chemistry. Montreal, Québec, Canada. 5-9 November.

Santore, R.C., P.R. Paquin, A.C. Ryan, **J. Meyer**, G. Rosen, I. Rivera-Duarte, D. Chadwick and P. Antunes. 2006. The use of metal accumulation data for understanding and predicting metal toxicity. Presented at the Twenty-seventh Annual Meeting of the Society of Environmental Toxicology and Chemistry. Montreal, Québec, Canada. 5-9 November.

Morris, J.M., A. Farag and **J.S. Meyer**. 2005. pH and Zn profiles in photosynthetic biofilm using ion-selective electrodes: An explanation for diel metal cycling? Presented at the Twenty-sixth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Baltimore, MD. 13-17 November.

- Kolts, J.M., B.L. Denier, C.J. Boese, R.A. Bell and **J.S. Meyer**. 2004. Acute toxicity of waterborne silver to *Ceriodaphnia dubia* in the presence of dissolved organic matter. Presented at the Twenty-fifth Annual Meeting (Fourth World Congress) of the Society of Environmental Toxicology and Chemistry. Portland, OR. 14-18 November.
- Morris, B.A., R.B. Bringolf, C.J. Boese and **J.S. Meyer**. 2004. Protective effects of inorganic salts against zinc toxicity to larval fathead minnows. Presented at the Seventeenth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry, Laramie, Wyoming. 1-2 April.
- Morris, B.A., A.M. Farag and **J.S. Meyer**. 2004. Chronic toxicity of NaHCO<sub>3</sub> to fathead minnows in water simulating the Tongue River, Montana, USA. Presented at the Twenty-fifth Annual Meeting (Fourth World Congress) of the Society of Environmental Toxicology and Chemistry. Portland, OR. 14-18 November.
- Morris, J.M., B. Morris, A.M. Farag and **J.S. Meyer**. 2004. Photosynthetically mediated Zn uptake in biofilm in High Ore Creek, Montana. Presented at the Seventeenth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry, Laramie, Wyoming. 1-2 April.
- Morris, J.M., B. Morris, A.M. Farag, D.A. Nimick and **J.S. Meyer**. 2004. Photosynthetically mediated Zn uptake in biofilm in High Ore Creek, Montana. Presented at the Twenty-fifth Annual Meeting (Fourth World Congress) of the Society of Environmental Toxicology and Chemistry. Portland, OR. 14-18 November.
- Schmidt, T.S., **J.S. Meyer** and W.H. Clements. 2004. Field test of the biotic ligand model in Colorado Rocky Mountain streams. Presented at the Twenty-fifth Annual Meeting (Fourth World Congress) of the Society of Environmental Toxicology and Chemistry. Portland, OR. 14-18 November.

**Abstracts of Presentations at Scientific Meetings (cont.):**

- Bringolf, R.B., B.A. Morris, S.A. Collyard, C.J. Boese, R.C. Santore, H.E. Allen and **J.S. Meyer**. 2003. Effects of pH and dissolved organic matter on acute toxicity of zinc to larval fathead minnows. Presented at the Twenty-fourth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Austin, TX. 9-13 November.
- Forbes, M. and **J.S. Meyer**. 2003. A test of a major-ion toxicity model to predict the toxicity of coal bed methane product waters to aquatic biota. Presented at the Annual Fall Meeting of the American Geophysical Union. San Francisco, CA. 8-12 December.
- Kolts, J.M., C.J. Boese and **J.S. Meyer**. 2003. Toxicity of dietborne and waterborne copper and silver to *Ceriodaphnia dubia*. Presented at the Twenty-fourth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Austin, TX. 9-13 November.
- Meyer, J.S.** and C.E. Schlegel. 2003. Relationship between boron concentrations and rainbow trout in the Rio de Los Patos, Argentina. Presented at the Twenty-fourth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Austin, TX. 9-13 November.
- Morris, B.A., R.B. Bringolf, C.J. Boese and **J.S. Meyer**. 2003. Protective effects of inorganic salts against zinc toxicity to larval fathead minnows. Presented at the Twenty-fourth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Austin, TX. 9-13 November.
- Morris, J.M., B. Mueller, A.M. Farag and **J.S. Meyer**. 2003. Profiling photosynthetic biofilm using miniaturized ion-selective electrodes. Presented at the Sixteenth Annual Meeting of

the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Denver, CO. 16 April.

- Morris, J.M., D.A. Nimick, A.M. Farag and **J.S. Meyer**. 2003. Biotic influences on diel cycling of Zn in High Ore Creek, Montana. Presented at the Twenty-fourth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Austin, TX. 9-13 November.
- Forbes, M.B., S.J. Clearwater, B.A. Morris and **J.S. Meyer**. 2002. Toxicity of coalbed methane product waters and receiving waters from the Powder River Basin, Wyoming. Presented at the Fifteenth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Fort Collins, CO. 19 April.
- Forbes, M.B., S.J. Clearwater, B.A. Morris and **J.S. Meyer**. 2002. Toxicity of coalbed methane product waters and receiving waters from the Powder River Basin, Wyoming. Presented at the Twenty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry. Salt Lake City, UT. 16-20 November.
- Lovvorn, M.B. and **J.S. Meyer**. 2002. Sunlight effects on natural waters: humic substances, copper complexation, and toxicity. Presented at the Fifteenth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Fort Collins, CO. 19 April.
- Lovvorn, M.B. and **J.S. Meyer**. 2002. Photoreactivity and copper complexation by wetland versus riverine DOM. Presented at the Twenty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry. Salt Lake City, UT. 16-20 November.
- Meyer, J.S.**, W.J. Adams, K.V. Brix, S.N. Luoma, D.R. Mount, W.A. Stubblefield, and C.M. Wood. 2002. Toxicity of dietborne metals to aquatic biota: emerging science and regulatory implications. Presented at the Twenty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry. Salt Lake City, UT. 16-20 November.

**Abstracts of Presentations at Scientific Meetings (cont.):**

- Morris, J.M., A.M. Farag, D.A. Nimick and **J.S. Meyer**. 2002. Biofilm and the diel cycling of aqueous metals in mountain streams. Presented at the Fifteenth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Fort Collins, CO. 19 April.
- Morris, J.M., A.M. Farag, D.A. Nimick and **J.S. Meyer**. 2002. Biofilm and the diel cycling of aqueous metals in mountain streams. Presented at the Twenty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry. Salt Lake City, UT. 16-20 November.
- Wu, K.B., V. Navab, R. Mathew, R.C. Santore, P.R. Paquin, **J.S. Meyer**, K.V. Brix and D.M. Di Toro. 2002. An application of the biotic ligand model (BLM) framework to nickel. Presented at the Twenty-third Annual Meeting of the Society of Environmental Toxicology and Chemistry. Salt Lake City, UT. 16-20 November.
- Lovvorn, M.B. and **J.S. Meyer**. 2001. Photochemically altered dissolved organic matter from natural waters: implications for copper-organic binding and toxicity. Presented at the Fourteenth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Denver, CO. 6 April.
- Lovvorn, M.B. and **J.S. Meyer**. 2001. Sunlight effects on natural waters: humic substances, copper complexation, and toxicity. Presented at the Twenty-second Annual Meeting of the Society of Environmental Toxicology and Chemistry. Baltimore, MD. 11-15 November.
- Moffett, J.W. and **J.S. Meyer**. 2001. Application of the biotic ligand model to the marine environment: opportunities and challenges. Presented at the Twenty-second Annual Meeting

of the Society of Environmental Toxicology and Chemistry. Baltimore, MD. 11-15 November.

- Morris, J.M., S.A. Collyard and **J.S. Meyer**. 2001. Does exposure to copper alter nutritional content of *Hyalella azteca*? Presented at the Twenty-second Annual Meeting of the Society of Environmental Toxicology and Chemistry. Baltimore, MD. 11-15 November.
- Boese, C.J., S.A. Collyard, H.L. Bergman and **J.S. Meyer**. 2000. Whole-body Cu accumulation predicts acute toxicity to *Lumbriculus variegatus* as pH and Ca vary. Presented at the Thirteenth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Laramie, WY. 7 April.
- Clearwater, S.J., A.M. Farag and **J.S. Meyer**. 2000. Alternative perspectives on dietborne metal toxicity to fish. Presented at the Twenty-first Annual Meeting of the Society of Environmental Toxicology and Chemistry. Nashville, TN. 12-16 November.
- Clearwater, S.J., M.J. Suedkamp, A.M. Farag, H.L. Bergman and **J.S. Meyer**. 2000. The relative importance of dietborne versus waterborne exposure in metals-contaminated aquatic ecosystems. Presented at the Thirteenth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Laramie, WY. 7 April.
- Collyard, S.A., C.J. Boese, H.L. Bergman and **J.S. Meyer**. 2000. Whole-body Cu accumulation predicts acute toxicity to *Hyalella azteca* as pH but not Ca varies. Presented at the Thirteenth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Laramie, WY. 7 April.
- Goldstein, J.N., W.A. Hubert, D.F. Woodward, A.M. Farag and **J.S. Meyer**. 2000. Differences in embryonic temperature tolerance affect the distributions of rainbow trout and brown trout in the Firehole River, Yellowstone National Park. Presented at the Annual Meeting of the Western Division of the American Fisheries Society. Telluride, CO. 16-20 July.

**Abstracts of Presentations at Scientific Meetings (cont.):**

- Lovvorn, M.B. and **J.S. Meyer**. 2000. Photochemically altered dissolved organic matter from natural waters: implications for copper-organic binding and toxicity. Presented at the Twenty-first Annual Meeting of the Society of Environmental Toxicology and Chemistry. Nashville, TN. 12-16 November.
- Meyer, J.S.** 2000. Let's banish the elusive term "bioavailable fraction" for metals. Presented at the Thirteenth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Laramie, WY. 7 April.
- Meyer, J.S.** 2000. Let's banish the elusive term "bioavailable fraction" for metals. Presented at the Third World Congress of the Society of Environmental Toxicology and Chemistry. Brighton, England. 21-25 May.
- Meyer, J.S.** 2000. The biotic ligand model for metals: What would McKim tell us to do next? Presented at the First International James M. McKim Species Extrapolation Workshop. Duluth, MN. 28 October 2000.
- Meyer, J.S.** and S.J. Clearwater. 2000. Effects of water-quality parameters on chronic toxicity of Cd, Cu, Ni, Pb and Zn. Presented at the Twenty-first Annual Meeting of the Society of Environmental Toxicology and Chemistry. Nashville, TN. 12-16 November.
- Morris, J.M., M.J. Suedkamp, E. Snyder-Conn, R.A. Holt, H.M. Lease, S.J. Clearwater, J.S. Foott and **J.S. Meyer**. 2000. Survival of juvenile Lost River suckers challenged with bacteria during exposure to sublethal ammonia concentrations. Presented at the Twenty-first

Annual Meeting of the Society of Environmental Toxicology and Chemistry. Nashville, TN. 12-16 November.

- Morris, J.M., M.J. Suedkamp, E. Snyder-Conn, R.A. Holt, H.M. Lease, S.J. Clearwater and **J.S. Meyer**. 2000. Survival and growth of juvenile Lost River suckers (*Deltistes luxatus*) challenged with a bacterial pathogen (*Flavobacterium columnare*) during exposure to sublethal ammonia concentrations at pH 9.5. Presented at the Thirteenth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Laramie, WY. 7 April.
- Boese, C.J., S.A. Collyard, H.L. Bergman and **J.S. Meyer**. 1999. Whole-body Cu accumulation predicts acute toxicity to *Lumbriculus variegatus* as pH and Ca vary. Presented at the Twentieth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Philadelphia, PA. 14-18 November.
- Clearwater, S.J., M.J. Suedkamp, A.M. Farag, H.L. Bergman and **J.S. Meyer**. 1999. The relative importance of dietborne versus waterborne exposure in metals-contaminated aquatic ecosystems. Presented at the Twentieth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Philadelphia, PA. 14-18 November.
- Collyard, S.A., C.J. Boese, H.L. Bergman and **J.S. Meyer**. 1999. Whole-body Cu accumulation predicts acute toxicity to *Hyaella azteca* as pH but not Ca varies. Presented at the Twentieth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Philadelphia, PA. 14-18 November.
- Goldstein, J.N., W.A. Hubert, D.F. Woodward, A.M. Farag and **J.S. Meyer**. 1999. Effects of geothermal additions on the distribution of trout in the Firehole River, Yellowstone National Park, U.S.A. Presented at the Annual Meeting of the American Fisheries Society, Charlotte, NC. 29 August - 2 September.

**Abstracts of Presentations at Scientific Meetings (cont.):**

- Kolm, K.E., K.C. Glover, J.C. Burton and **J.S. Meyer**. 1999. Developing integrated technical approaches to meet the ecosystem sustainability challenge: watershed, ground-water basin, and wetlands perspectives. Presented at the Annual Meeting of the Geological Society of America. Denver, CO. 25 October.
- Lease, H.M., J.A. Hansen, H.L. Bergman and **J.S. Meyer**. 1999. Histopathological changes in gills of Lost River suckers (*Deltistes luxatus*) exposed to ammonia at high pH. Presented at the Twelfth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Denver, CO. 9 April.
- Lease, H.M., J.A. Hansen, H.L. Bergman and **J.S. Meyer**. 1999. Gill structural changes as a potential indicator of eutrophic stress. Presented at the 1999 Annual Meeting of the Western Division of the American Fisheries Society. Moscow, ID. 12-14 July.
- Lease, H.M., J.A. Hansen, L.D. DeBrey, C.J. Boese, H.L. Bergman and **J.S. Meyer**. 1999. Histopathological changes in gills of Lost River suckers exposed to elevated pH and ammonia. Presented at the Twentieth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Philadelphia, PA. 14-18 November.
- Lease, H.M., **J.S. Meyer**, J.A. Hansen, L.D. DeBrey and H.L. Bergman. 1999. Chronic toxicity of low dissolved oxygen and elevated pH and ammonia to Lost River Suckers (*Deltistes luxatus*). Presented at the Third Klamath Basin Watershed Restoration and Research Conference. Klamath Falls, OR. 9-11 March.
- Lovvorn, M.B. and **J.S. Meyer**. 1999. Photochemical alteration of dissolved organic matter

from natural waters: implications for copper bioavailability in natural waters. Presented at the Twelfth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Denver, CO. 9 April.

- Lovvorn, M.B., R.G. Zepp and **J.S. Meyer**. 1999. Photochemical alteration of dissolved organic matter from natural waters: Implications for copper bioavailability. Presented at the Twentieth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Philadelphia, PA. 14-18 November.
- Meyer, J.S.** 1999. Dissolved organic matter can decrease the protective effect of calcium against waterborne metal toxicity. Presented at the Twentieth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Philadelphia, PA. 14-18 November.
- Rockwell, R.W., K.H. Dahl, J.A. Lockwood and **J.S. Meyer**. 1999. Application of sediment quality guidelines for metals to a montane lotic ecosystem: Year 1 summary. Presented at the Twelfth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Denver, CO. 9 April.
- Rockwell, R.W., K.H. Dahl, J.A. Lockwood and **J.S. Meyer**. 1999. Application of sediment quality guidelines for metals to a montane lotic ecosystem: Year 1 summary. Presented at the Twentieth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Philadelphia, PA. 14-18 November.
- Allen, H.E., H.L. Bergman, D.M. DiToro, J.D. Mahony, **J.S. Meyer** and P.R. Paquin. 1998. Speciation: the key factor for appropriate risk assessment of metals in aquatic ecosystems. Presented at the Eighth Annual Meeting of the Society of Environmental Toxicology and Chemistry - Europe. Bordeaux, France. 14-18 April.

#### **Abstracts of Presentations at Scientific Meetings (cont.):**

- Collyard, S.A., C.J. Boese, H.L. Bergman and **J.S. Meyer**. 1998. Relationships between LC50 and body burden of copper in the invertebrates Hyalella azteca and Daphnia magna. Presented at the Nineteenth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Charlotte, NC. 15-19 November.
- Lovvorn, M.B. and **J.S. Meyer**. 1998. Photochemical alteration of humic acid: Implications for copper toxicity in natural waters. Presented at the Fourth Regional Animal Physiology Meeting. Boulder, CO. 2 May.
- Lovvorn, M.B. and **J.S. Meyer**. 1998. Cation-exchange effects on DOM geochemistry collected by reverse osmosis from hard, alkaline waters. Presented at the 1998 Joint Meeting of the American Society of Limnology and Oceanography and the Ecological Society of America. St. Louis, MO. 8-13 June.
- Lovvorn, M.B. and **J.S. Meyer**. 1998. Cation-exchange effects on dissolved organic matter collected by reverse osmosis from hard, alkaline waters. Presented at the Nineteenth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Charlotte, NC. 15-19 November.
- Meyer, J.S.** 1998. Why is the slope of the  $\ln(\text{LC50})$  vs.  $\ln(\text{hardness})$  adjustment equation for copper approximately equal to 1? Presented at the Nineteenth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Charlotte, NC. 15-19 November.
- Paquin, P.R., H.E. Allen, H.L. Bergman, D.M. DiToro and **J.S. Meyer**. 1998. Speciation: a key factor for appropriate risk assessment of metals in aquatic ecosystems. Presented at the U.S. Environmental Protection Agency Meeting on Water Quality Standards, Water Quality Criteria, and Water Quality-based Permitting, Including Implementation. Philadelphia, PA.

24-27 August.

- Suedkamp, M.J., A.M. Farag and **J.S. Meyer**. 1998. Dietary availability of metals incorporated into aquatic invertebrates: Are species and history of metals exposure important? Presented at the Nineteenth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Charlotte, NC. 15-19 November.
- Allen, H.E., H.L. Bergman, D.M. DiToro, J.D. Mahony, **J.S. Meyer** and P.R. Paquin. 1997. Water quality criteria for metals: a new paradigm. Presented at the Seventh Annual Meeting of the Society of Environmental Toxicology and Chemistry - Europe. Amstersdam, The Netherlands. 6-10 April.
- Camp, J., C. Martínez del Rio, T. H. Kerstetter and **J.S. Meyer**. 1997. Effects of a metals-contaminated macroinvertebrate diet on digestive function in rainbow trout. Presented at the Tenth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Laramie, WY. 10-11 April.
- Camp, J., C. Martínez del Rio, T. H. Kerstetter and **J.S. Meyer**. 1997. Effects of a metals-contaminated macroinvertebrate diet on digestive function in rainbow trout. Presented at the Third Annual Regional Animal Physiology Meeting, Laramie, WY. 19 April.
- Camp, J., C. Martínez del Rio, T. H. Kerstetter and **J.S. Meyer**. 1997. Effects of metals-contaminated macroinvertebrate diet on digestive function in rainbow trout. Presented at the Eighteenth Annual Meeting of the Society of Environmental Toxicology and Chemistry. San Francisco, CA. 16-20 November.

**Abstracts of Presentations at Scientific Meetings (cont.):**

- Camp, J., C. Martínez del Rio, T. H. Kerstetter and **J.S. Meyer**. 1997. Effects of a metals-contaminated macroinvertebrate diet and starvation on weight gain and hepatic ornithine decarboxylase activity in rainbow trout. Presented at the Tenth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Laramie, WY. 10-11 April.
- Camp, J., C. Martínez del Rio, T. H. Kerstetter and **J.S. Meyer**. 1997. Effects of a metals-contaminated macroinvertebrate diet and starvation on weight gain and hepatic ornithine decarboxylase activity in rainbow trout. Presented at the Third Annual Regional Animal Physiology Meeting, Laramie, WY. 19 April.
- Camp, J., C. Martínez del Rio, T. H. Kerstetter and **J.S. Meyer**. 1997. Effects of metals-contaminated macroinvertebrate diet on weight and hepatic ornithine decarboxylase activity in rainbow trout. Presented at the Eighteenth Annual Meeting of the Society of Environmental Toxicology and Chemistry. San Francisco, CA. 16-20 November.
- Lovvorn, M.B. and **J.S. Meyer**. 1997. Photochemical alteration of humic acid: comparison of monochromatic UV to sunlight. Presented at the Tenth Annual Meeting of the Wyoming Section of the American Water Resources Association. Laramie, WY. 13-14 November.
- Lovvorn, M.B. and **J.S. Meyer**. 1997. Photochemical alteration of humic acid: comparison of monochromatic UV to sunlight. Presented at the Eighteenth Annual Meeting of the Society of Environmental Toxicology and Chemistry. San Francisco, CA. 16-20 November.
- Markwiese, J.T., **J.S. Meyer** and P.J.S. Colberg. 1997. Copper tolerance in iron-reducing bacteria: implications for copper mobilization in aquatic systems. Presented at the Tenth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Laramie, WY. 10-11 April.

- Markwiese, J.T., **J.S. Meyer** and P.J.S. Colberg. 1997. Copper tolerance in iron-reducing bacteria: implications for copper mobilization in sediments. Presented at the Eighteenth Annual Meeting of the Society of Environmental Toxicology and Chemistry. San Francisco, CA. 16-20 November.
- Meyer, J.S.**, C. Boese, S.A. Collyard and H.L. Bergman. 1997. Chemistry of copper bioavailability. III. Affinities, capacities, and effects of copper binding to biotic ligands. Presented at the Eighteenth Annual Meeting of the Society of Environmental Toxicology and Chemistry. San Francisco, CA. 16-20 November.
- Meyer, J.S.**, D.F. Woodward, J.N. Goldstein, A. M. Farag and W.A. Hubert. 1997. Relationships between boron concentrations and trout in the Firehole River, Wyoming, USA. Presented at the Second International Symposium on the Health Effects of Boron and Its Compounds. Irvine, CA. 22-24 October.
- Sheridan, D.L., P.J.S. Colberg and **J.S. Meyer**. 1997. Investigation of microbial communities responsible for degradation of toluene in unexposed and exposed Laramie River sediments. Presented at the Tenth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Laramie, WY. 10-11 April.
- Sheridan, D.L., P.J.S. Colberg and **J.S. Meyer**. 1997. Investigation of microbial communities responsible for degradation of toluene in unexposed and exposed Laramie River sediments. Presented at the Eighteenth Annual Meeting of the Society of Environmental Toxicology and Chemistry. San Francisco, CA. 16-20 November.

**Abstracts of Presentations at Scientific Meetings (cont.):**

- Suedkamp, M.J., **J.S. Meyer**, A.M. Farag and D.F. Woodward. 1997. Biochemical characterization of organo-metallic complexes and free metals found in metals-contaminated aquatic invertebrates. Presented at the Tenth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Laramie, WY. 10-11 April.
- Elderkin, J.M., C. Martinez del Rio, **J.S. Meyer** and T. Kerstetter. 1996. Methods for studying physiological effects of dietary exposure to metals in rainbow trout. Presented at the Regional Animal Physiology Meeting. Colorado State University, Fort Collins, CO. 6 April.
- Elderkin, J.M., C. Martinez del Rio, **J.S. Meyer** and T. Kerstetter. 1996. Methods for studying physiological effects of dietary exposure to metals in rainbow trout. Presented at the Ninth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Denver, CO. 19 April.
- MacDonald, D. and **J. Meyer**. 1996. An ecological risk assessment of waterfowl feeding on plants and invertebrates containing heavy metals in the Arcata Marsh and Wildlife Sanctuary, Arcata, California. Presented at the Seventeenth Annual Meeting of the Society of Wetland Scientists. Kansas City, MO. 9-14 June.
- Markwiese, J.T., **J.S. Meyer** and P.J.S. Colberg. 1996. Heavy metal mobilization resulting from microbial reduction of iron oxide. Presented at the Seventeenth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Washington, DC. 17-21 November.
- Shockley, D.L., **J.S. Meyer** and P.J.S. Colberg. 1996. Investigation of microbial communities responsible for degradation of toluene in exposed and unexposed river sediment. Presented at the Ninth Annual Meeting of the Rocky Mountain Chapter of the Society of Environmental Toxicology and Chemistry. Denver, CO. 19 April.

- Suedkamp, M.J., **J.S. Meyer**, A.M. Farag and D.F. Woodward. 1996. Biochemical characterization of organo-metallic complexes and free metals found in metals-contaminated aquatic invertebrates. Presented at the Seventeenth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Washington, DC. 17-21 November.
- Bergman, H.L., R.K. MacRae and **J.S. Meyer**. 1995. Metal binding and toxicity in fish. Presented at the Workshop on Metal Speciation and Contamination of Surface Waters. Jekyll Island, GA. 25-28 June.
- Farag, A.M., D.F. Woodward, W. Brumbaugh and **J.S. Meyer**. 1995. Concentrations of metals in biofilm, benthic macroinvertebrates, and fish in the Coeur d'Alene Basin, Idaho. Presented at the Second World Congress of the Society of Environmental Toxicology and Chemistry. Vancouver, British Columbia, Canada. 5-9 November.
- Frankenbach, R.I. and **J.S. Meyer**. 1995. The fate of nitrogen in an emergent macrophyte wastewater treatment wetland. Presented at the Sixteenth Annual Meeting of the Society of Wetland Scientists. Cambridge, MA. 28 May - 2 June.
- Hansen, J., H.L. Bergman, **J.S. Meyer**, R. MacRae, J. Marr, J. Lipton and D. Cacela. 1995. The avoidance of copper by salmonids as affected by metals concentration, organic content, and acclimation. Presented at the Second World Congress of the Society of Environmental Toxicology and Chemistry. Vancouver, British Columbia, Canada. 5-9 November.

**Abstracts of Presentations at Scientific Meetings (cont.):**

- MacRae, R.K., **J.S. Meyer**, J.A. Hansen, H.L. Bergman, A. Maest, J. Marr, D. Beltman and J. Lipton. 1995. Determination of an organic-acid analog of DOC for use in copper toxicity studies on salmonids. Presented at the Second World Congress of the Society of Environmental Toxicology and Chemistry. Vancouver, British Columbia, Canada. 5-9 November.
- Marr, J., J. Lipton, A. Maest, D. Cacela, **J.S. Meyer**, J. Hansen, R. MacRae and H.L. Bergman. 1995. Acute lethality and bioavailability of copper in the presence of dissolved organic carbon. Presented at the Second World Congress of the Society of Environmental Toxicology and Chemistry. Vancouver, British Columbia, Canada. 5-9 November.
- Meyer, J.S.**, D. Beltman, A. Maest, J. Marr, J. Lipton, C. Cors, D. Cacela and R. MacRae. 1995. Use of geochemical and toxicity modeling to predict lethality of copper in a metals-impacted stream. Presented at the Second World Congress of the Society of Environmental Toxicology and Chemistry. Vancouver, British Columbia, Canada. 5-9 November.
- Meyer, J.S.**, R.K. MacRae, J.C.A. Marr, D.E. Smith and H.L. Bergman. 1995. Effects of dissolved organic carbon on the bioavailability of copper to fish. Presented as a plenary lecture at a conference of the International Humic Substances Society. Atlanta, GA. 27 August - 1 September.
- Meyer, J.S.**, C.S. Mazur, M.E. Bedessem, K.A. Rittle, J.I. Drever, N.G. Swoboda-Colberg and P.J.S. Colberg. 1995. Microbial transformations of environmental contaminants during sulfate reduction. Presented at the Tri-Service Workshop on Bioavailability of Organic Contaminants in Soils and Sediments. Monterey, CA. 9-12 April.
- Reinharz, E., H. Bergman, L. McDonald, **J. Meyer**, R.B. Luthi and M. Holt. 1995. Injury assessment under OPA 90. Presented at the Fourteenth Biennial International Oil Spill Conference. Long Beach, CA. 27 February - 2 March.

- Shockley, D.L., **J.S. Meyer** and P.J.S. Colberg. 1995. Investigation of microbial communities responsible for degradation of toluene in exposed and unexposed soils. Presented at the Twenty-fifth Annual Rocky Mountain Groundwater Conference, Jackson, WY. 4-6 October.
- Boyce, M.S., **J.S. Meyer** and L. Irwin. 1994. Resource selection function model for viability of northern spotted owls. Presented at the First Annual Conference of the Wildlife Society. Albuquerque, NM. 21-24 September.
- Meyer, J.S.**, R. Frankenbach, D. Camras and R.A. Gearheart. 1994. Nitrogen removal from constructed wetlands in the Arcata Marsh and Wildlife Sanctuary, California. Presented at the Fifteenth Annual Meeting of the Society of Wetland Scientists. Portland, OR. 30 May - 3 June.
- Reinharz, E., R.B. Luthi, L. McDonald, H. Bergman and **J. Meyer**. 1994. Injury assessment for natural resources under Oil Pollution Act of 1990. Presented at the Fifteenth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Denver, CO. 30 October - 3 November.
- Meyer, J.S.**, D.D. Gulley, M.S. Goodrich, D.C. Szmania and A.S. Brooks. 1993. Modeling toxicity due to intermittent exposure of freshwater fish to monochloramine. Presented at the Fourteenth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Houston, TX. 14-18 November.

#### **Abstracts of Presentations at Scientific Meetings (cont.):**

- Meyer, J.S.** 1992. Effects of pH, redox potential and light on physical-chemical interactions and bioavailability of chemicals in aquatic ecosystems. Presented at the Thirteenth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Cincinnati, OH. 8-12 November.
- Payne, M.S., H. Vu, L. Crowser and **J.S. Meyer**. 1990. Identifying habitat mosaics and changes around Northern Spotted Owl sites on BLM land in western Oregon. Presented at the Seventh MOSS Users Conference. Portland, OR. 29 November.
- Gächter, R., **J.S. Meyer** and A. Mares. 1988. Do bacteria contribute directly to release and fixation of phosphorus in lake sediments? Presented at the Annual Meeting of the American Society of Limnology and Oceanography. Boulder, CO. 12-16 June.
- Meyer, J.S.**, R. Gächter and A. Mares. 1988. Bacterial contributions to release and fixation of phosphorus in lake sediments. Presented at the Second International Workshop on Phosphorus in Sediments. Fiskebäckskil, Sweden. 14-16 September.
- Zeyer, J. and J. Meyer. 1988. Ecotoxicological criteria for final storage quality -- possibilities and limits. Presented at the Swiss Workshop on Land Disposal of Solid Wastes. Gerzensee, Switzerland. 14-17 March.
- Meyer, J.S.** and C.L. Sowards. 1987. Geographic, species and age differences in element concentrations among South Dakota birds. Presented at the Eighth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Pensacola, FL. 9-12 November.
- Crossey, M.J., A. Boelter and **J.S. Meyer**. 1986. Temporal variability of toxicity in a stream receiving industrial discharge. Presented at the Seventh Annual Meeting of the Society of Environmental Toxicology and Chemistry. Alexandria, VA. 2-5 November.
- Crossey, M.J., A. Boelter and **J.S. Meyer**. 1986. Toxicological and chemical detection of contaminated ground water flowing into streams and rivers. Presented at the Eighth Annual Rocky Mountain Regional Meeting of the American Chemical Society. Denver, CO. 8-12 June.

- Brookshire, D.C., D.D. Gulley and **J.S. Meyer**. 1985. Effect of diet and water formulation on survival and reproduction in Ceriodaphnia affinis/dubia. Presented at the Sixth Annual Meeting of the Society of Environmental Toxicology and Chemistry. St. Louis, MO. 10-13 November.
- Meyer, J.S.**, C.G. Ingersoll and L.L. McDonald. 1984. Sensitivity analysis of population growth rates estimated from cladoceran chronic toxicity tests. Presented at the Fifth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Arlington, VA. 4-7 November.
- Meyer, J.S.**, D.A. Sanchez, H.L. Bergman, D.B. McWhorter and T. Garland. 1984. Aquatic toxicity of raw and spent oil shale leachates. Presented at the Fifth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Arlington, VA. 4-7 November.
- Sanchez, D.A., **J.S. Meyer** and H.L. Bergman. 1984. Toxicity of treated oil shale process waters to aquatic biota. Presented at the Fifth Annual Meeting of the Society of Environmental Toxicology and Chemistry. Arlington, VA. 4-7 November.
- Baxter, G.T. and **J.S. Meyer**. 1982. The status and decline of the Wyoming Toad, Bufo hemiophrys baxteri. Presented at the Joint Meeting of the Colorado-Wyoming Academy of Science and the Central Rockies Chapter of the Ecological Society of America. Fort Collins, CO. 23-24 April.

**Abstracts of Presentations at Scientific Meetings (cont.):**

- Bergman, H.L., **J.S. Meyer**, G.L. Linder and B.R. Parkhurst. 1982. Effluent toxicity testing vs. single-compound standards. Presented at the Workshop on Effects of Trace Elements on Aquatic Systems. Raleigh, NC. 23-24 March.
- Bergman, H.L., **J.S. Meyer** and D.A. Sanchez. 1982. Assessing the effects of oil shale facilities on water quality: critique and alternatives. Presented at Oil Shale: The Environmental Challenges III. Vail, CO. 9-12 August.
- Meyer, J.S.** and H.L. Bergman. 1982. Identifying problem compounds in complex organic mixtures. Presented at the Fifth ORNL Life Sciences Symposium -- Synthetic Fossil Fuel Technologies: Results of Health and Environmental Studies. Gatlinburg, TN. 24-27 October.
- Meyer, J.S.**, M.S. Boyce and H.L. Bergman. 1982. Predicting population-level effects of pollutants. Presented at the Third Annual Meeting of the Society of Environmental Toxicology and Chemistry. Arlington, VA. 14-17 November.
- Bergman, H.L. and **J.S. Meyer**. 1981. Hazard assessment strategy for complex effluents: synfuel wastewater case study. Presented at the Second Annual Meeting of the Society of Environmental Toxicology and Chemistry. Arlington, VA. 22-25 November.
- Linder, G.L., **J.S. Meyer**, B.L. Steadman and H.L. Bergman. 1981. Identification of bioaccumulated organics from synfuel process waters. Presented at the Joint Meeting of the Southwest Division of the American Association for the Advancement of Science and the Colorado-Wyoming Academy of Science. Greeley, CO. 20-24 April.
- Meyer, J.S.** 1981. Applications of population biology theory to aquatic toxicology. Presented at the Annual Meeting of the Guild of Rocky Mountain Population Biologists. Gothic, CO. 18-20 September.
- Meyer, J.S.**, G. Linder and H.L. Bergman. 1981. An approach for bioaccumulation studies of complex organic effluents: extraction of representative organics from rainbow trout and

water. Presented at the Second Annual Meeting of the Society of Environmental Toxicology and Chemistry. Arlington, VA. 22-25 November.

Bergman, H.L., G.M. DeGraeve, D.L. Geiger, **J.S. Meyer** and M.D. Marcus. 1980. Aquatic ecosystem hazard assessment of underground coal gasification process waters. Presented at the 20th Hanford Life Sciences Symposium on Coal Conversion and the Environment. Richland, WA. 19-23 October.

**Meyer, J.S.**, H.L. Bergman and M.D. Marcus. 1979. Inhibitory interactions of aromatic organics during microbial metabolism. Presented at the 30th Annual Meeting of the Ecological Society of America. Stillwater, OK. 12-17 August.

Fannin, T.E., H.L. Bergman, M. Parker, M.D. Marcus and **J.S. Meyer**. 1978. A simple screening system to identify environmentally persistent hydrocarbons. Presented at the 41st Annual Meeting of the American Society of Limnology and Oceanography. Victoria, BC. 19-22 June.

### **Invited Lectures and Other Presentations:**

"Surface Water in New Mexico: Challenges, Changes, and Game Changers." Presented at the 73<sup>rd</sup> Annual Convention and Trade Show of the New Mexico Mining Association, Las Cruces, NM. September 7, 2012.

"Effects of Metal Mixtures on Fish Populations in a Mining-Impacted Stream: Railroad Creek, Washington, USA." Presented at 2<sup>nd</sup> Rio Tinto Aquatic Toxicology Symposium, Holden Village, WA. June 13, 2012.

"Diel Cycling of Zn in a Mining-Impacted Montane Stream: Mechanisms and Consequences." Presented at 1<sup>st</sup> Rio Tinto Aquatic Toxicology Symposium, Ryan Camp, Death Valley, CA. March 19, 2010.

"Contribution of Biofilm to Diel Zinc Cycling in a Mining-Impacted Stream." Presented at Environmental Research Laboratory of the U.S. Environmental Protection Agency's Mid-Continent Ecology Division, Duluth, MN. February 9, 2006.

"Review of the Chronic Toxicity of Waterborne Metals to Aquatic Biota." Presented at the Second Colloquium on Metals in the Environment, Electric Power Research Institute, Washington, DC. January 28-30, 2001.

"The biotic ligand model for metals: What would McKim tell us to do next?" Presented at the First International James M. McKim Species Extrapolation Workshop, U.S. Environmental Protection Agency Environmental Research Laboratory, Duluth, Minnesota. October 28, 2000.

"Effects of dietborne metals on aquatic biota: a few gut hunches." Presented at the Workshop on Effects of Dietary Metal Uptake by Fish and Other Aquatic Organisms, U.S. Environmental Protection Agency Environmental Research Laboratory, Duluth, Minnesota. March 1-2, 2000.

"Biotic-ligand model for establishing water quality criteria for lead." Presented at the 21<sup>st</sup> Annual Lead Occupational Health and Environmental Protection Conference, Whitefish, Montana. December 1-4, 1999.

"Free-ion activity and biotic-ligand models in ecotoxicology." Presented at Natural Waters and Water Technology: Chemical Speciation of Metals and Bioavailability, Eighth European Research Conference, Castelvechio Pascoli, Italy. October 15-20, 1999.

"Physiological and behavioral mechanisms of metal toxicity in fish." Presented at the 20<sup>th</sup> Conference of the European Society for Comparative Physiology and Biochemistry,

Aarhus, Denmark (co-author with H.L. Bergman, who made the presentation, and J.A. Hansen). June 27-30, 1999.

"Biotic-ligand model predicts toxicity of copper and nickel to fish better than does free-ion-activity model." Presented at Limnological Research Center, EAWAG/ETH, Kastanienbaum, Switzerland. June 18, 1998.

#### **Invited Lectures and Other Presentations (cont.):**

"Removal of nitrogen from constructed wetlands in the Arcata Wastewater Treatment Plant and the Arcata Marsh and Wildlife Sanctuary, northern California." Presented at:

- Limnological Research Center, EAWAG/ETH, Kastanienbaum, Switzerland. June 18, 1998.
- Department of Zoology and Physiology, University of Wyoming, Laramie, WY. November 6, 1997.
- Department of Biology, Anhui University, Hefei, Anhui Province, People's Republic of China. May 27, 1997.
- Public Works Department, City of Albuquerque, NM. April 4, 1997.
- Student Chapter Meeting, American Society of Civil Engineers, University of Wyoming, Laramie, WY. October 4, 1995.
- State Water Forum, Cheyenne, WY. January 26, 1995.

"Aquatic effects of copper." Presented at Second Annual Meeting of the Environmental Planning Committee of the International Copper Association, Geneva, Switzerland. June 16, 1998.

"Bioavailability of metals to fish: Incorporating geochemical speciation modeling into aquatic toxicology." Presented at:

- Department of Resources and Environmental Science, Hefei University of Technology, Hefei, Anhui Province, People's Republic of China. May 27, 1997.
- Anhui Environmental Protection Bureau, Hefei, Anhui Province, People's Republic of China. May 20, 1997.
- Department of Earth and Planetary Sciences, University of New Mexico, Albuquerque, NM. April 3, 1997.

"Regulation of aqueous discharges of metals in the United States." Presented at Anhui Environmental Protection Bureau, Hefei, Anhui Province, People's Republic of China. May 20, 1997.

"Heavy metals in plants and benthic invertebrates in the Arcata Marsh and Wildlife Sanctuary, northern California." Presented at:

- Public Works Department, City of Albuquerque, NM. April 4, 1997.

"Aquatic toxicity research related to metals at the University of Wyoming." Presented at U.S. Environmental Protection Agency Annual Sediment Quality Criteria Planning Meeting, Duluth, MN. September 2, 1996.

"Biological considerations for establishing mechanistically based water quality criteria for metals." Presented at U.S. Environmental Protection Agency Office of Water, Washington, DC. November 22, 1996

"An overview of environmental contaminants research at the University of Wyoming." Presented at:

- Tyndall Air Force Base, Panama City, FL. August 25, 1995.
- Wright-Patterson Air Force Base, Dayton, OH. July 17, 1995

"Effects of biogeochemical processes on bioavailability of chemicals in sediments: What's the big stink?" Presented at Fort Johnson Marine Science Seminar Series, Medical University of South Carolina, Charleston, SC. October 21, 1994.

**Invited Lectures and Other Presentations (cont.):**

"Influence of habitat fragmentation on Spotted Owl site location, site occupancy, and reproductive status in western Oregon." Presented at:

- Zoology and Physiology Department Seminar, University of Wyoming. September 29, 1994.
- Wildlife Department Seminar, Humboldt State University, Arcata, CA. October 15, 1992.
- West Coast Regional Meeting of the National Council of the Paper Industry for Air and Stream Improvement, Portland, OR. September 30, 1992.

"Proposed groundwater remediation experiment using large column systems." Presented at EPSCoR Groundwater Cluster Seminar, University of Wyoming. March 3, 1994.

"Effects of biogeochemical processes on bioavailability of chemicals in aquatic ecosystems." Presented at Department of Zoology and Physiology Seminar, University of Wyoming. April 5, 1993.

"Do bacteria contribute directly to release and fixation of phosphorus in lake sediments?" Presented at:

- Institute for Inorganic, Analytical and Physical Chemistry, University of Bern, Bern, Switzerland. January 23, 1989.
- Swiss Federal Institute for Water Resources and Water Pollution Control (EAWAG/ETH), Dübendorf, Switzerland. November 4, 1988.
- W.K. Kellogg Biological Station, University of Michigan, Hickory Corners, MI. June 22, 1988.
- Center for Great Lakes Studies, University of Wisconsin-Milwaukee, Milwaukee, WI. June 20, 1988.

"Estimating uncertainty in cladoceran population growth rates." Presented at Lake Research Laboratory, Swiss Federal Institute for Water Resources and Water Pollution Control (EAWAG/ETH), Kastanienbaum, Switzerland. July 9, 1988.

"Population growth rate as an indicator of pollutant stress: Is it sensitive and does it tell us anything new?" Presented at U.S. Environmental Protection Agency, Environmental Research Laboratory, Duluth, MN. March 4, 1986.

"Review of aquatic toxicity database for synfuel-related waters." Presented at Second Annual User's Review of Integrated Health and Environmental Risk Analysis Program, U.S. Environmental Protection Agency, Washington, DC. September 24-25, 1982.

"A conceptual model of the population-level effects of pollutants." Presented at U.S. Environmental Protection Agency, Environmental Research Laboratory, Duluth, MN. March 10, 1982.

**Invited Panel Discussion Participant:**

"Riverbank Refineries: Assessing the Impacts on the Platte River." Held at Casper College, Casper, WY. November 16, 2000.

## **COMMITTEES**

### **University Committees:**

EPSCoR Committee, 2000-2002  
Environment and Natural Resources Committee, 1994-1999  
Conflict of Interest Committee, Fall 1995 and Fall & Spring 1996  
Faculty Senate, 1994-1996

### **College Committees:**

Self-designed Major Committee, Fall 1996

### **Department Committees:**

Finance Committee, 2005-Present  
L. Floyd Clarke Fund Committee, 2001-2005  
Physiology/Cell Curriculum Committee, 1998-Present  
Wildlife Biologist Search Committee, Fall 1995  
Salary Committee, June 1995  
Wildlife Biology and Ecology Curriculum Committee, 1994-Present

## **STUDENT ADVISING/GRADUATE SUPERVISION**

### **Undergraduate Students:**

Spring	2006	18 undergraduate advisees
Fall	2005	25 undergraduate advisees
Spring	2005	25 undergraduate advisees
Fall	2004	26 undergraduate advisees
Spring	2004	24 undergraduate advisees
Fall	2003	24 undergraduate advisees
Spring	2003	17 undergraduate advisees
Fall	2002	16 undergraduate advisees
Spring	2002	15 undergraduate advisees
Fall	2001	14 undergraduate advisees
Spring	2001	14 undergraduate advisees
Fall	2000	14 undergraduate advisees
Spring	2000	10 undergraduate advisees
Fall	1999	10 undergraduate advisees
Spring	1999	14 undergraduate advisees
Fall	1998	13 undergraduate advisees
Spring	1998	19 undergraduate advisees
Fall	1997	22 undergraduate advisees
Spring	1997	20 undergraduate advisees
Fall	1996	18 undergraduate advisees
Spring	1996	19 undergraduate advisees
Fall	1995	26 undergraduate advisees
Summer	1995	23 undergraduate advisees
Spring	1995	18 undergraduate advisees

Fall 1994 25 undergraduate advisees  
Spring 1994 9 undergraduate advisees

### **Graduate Students:**

Previous graduate committee memberships:

21 MS/MA (4 at Humboldt State University)  
18 PhD

Previous external examiner for graduate theses:

1 PhD (McMaster University, Canada)  
1 PhD (University of Waterloo, Canada)

Graduate degrees completed under my supervision:

David Camras - MS, 1995 (Wastewater Utilization, Humboldt State University)  
Rolf Frankenbach - MS, 1996 (Wastewater Utilization, Humboldt State University)  
Jeanine Elderkin - MS, 1997 (Zoology & Physiology, University of Wyoming; co-chair with Dr. Carlos Martinez del Rio)  
Diana Sheridan - MS, 1997 (Zoology & Physiology, University of Wyoming; co-chair with Dr. Patricia Colberg)  
Michael Suedkamp - MS, 1998 (Zoology & Physiology, University of Wyoming)  
Hilary Lease - MS, 2000 (Zoology & Physiology, University of Wyoming; co-chair with Dr. Harold Bergman)  
Scott Collyard - MS, 2002 (Zoology & Physiology, University of Wyoming)  
Marjorie Brooks Lovvorn - PhD, 2003 (Zoology & Physiology, University of Wyoming)  
Melanie Forbes - MS, 2003 (Zoology & Physiology, University of Wyoming)  
Jason Kolts - MS, 2004 (Zoology & Physiology, University of Wyoming)  
Jeffrey Morris - PhD, 2005 (Zoology & Physiology, University of Wyoming)  
Laurie Johnson - MS, 2007 (Zoology & Physiology, University of Wyoming)

### **OTHER ACTIVITIES/ACCOMPLISHMENTS**

#### **Non-UW Students Mentored:**

1994 Stoakley Lloyd, Summer Minority High School Student Research Apprenticeship Program (MHSSRAP) (co-mentored with Patricia Colberg).

#### **University Service:**

2004-2005 Member, Search Committee for Roy L. and Caryl L. Cline Distinguished Chair in Engineering, Environment, and Natural Resources (College of Engineering)  
2004 Coordinator for distribution and collection of United Way pledge forms in the Department of Zoology and Physiology  
2003-Present Advisor to University of Wyoming's International Programs regarding acceptability of courses at foreign universities as transfer credit for UW students studying abroad  
1996 Presentation about Department of Zoology and Physiology to visiting minority high school students for Arts and Sciences College. 29 October.

Reviewer      DEPSCoR Program Proposals (2004 – 1)  
Abandoned Coal Mine Land Research Program Proposals (1995 - 1, 1997 - 1,  
2000 - 1)  
EPSCoR Undergraduate Summer Research Fellowship Proposals  
(1996 - 10, 1998 - 9)  
Western Region's Water Resources Research Competitive Grants Program  
Proposals (administered through Water Research Center) (1997 - 1, 1998 - 1)

**Community Service:**

2005-2006      Member of the non-partisan Board of Supervisors of the Laramie Rivers  
Conservation District.  
1996              Volunteer phone answering for KUWR Radio Fall Membership Drive. 22  
October.  
1993              Member, Arcata Marsh Interpretive Center Displays Committee, City of Arcata,  
CA.  
1992-1993      Member, Wetlands and Creeks Advisory Committee, City of Arcata, CA.

**Federal Government Service:**

2003-2004      Member, Search Committee for the Director of the U.S. Environmental Protection  
Agency's Mid-Continent Ecology Division, Duluth, MN (part of the National  
Health and Ecological Effects Research Laboratory).

**International Service:**

1997              Advisor on water pollution problems to Anhui Environmental Protection Bureau,  
Anhui Province, People's Republic of China; this included a trip to Anhui  
Province to confer with AEPB staff and visit field sites in May 1997.

**Consulting Activities:**

2002-2006      Member, Boron Ecotoxicology Advisory Group, Rio Tinto Borax, Valencia, CA.  
2002-2006      Consultant to Rio Tinto Borax, Valencia, CA:  
- Provided advice and oversight for a rainbow trout reproduction study in the  
altiplano of northwestern Argentina.  
2001-2003      Consultant to the Office of Water, U.S. Environmental Protection Agency,  
Washington, DC:  
- Assisted in writing draft document titled "2003 Update of Ambient Water  
Quality Criteria for Copper".  
- Reviewed the completed draft document and related documents.  
1997              Consultant to the Environmental Department, Anhui Province, Peoples' Republic  
of China:  
- provided advice regarding water pollution problems (during visit to China in  
May 1997).  
1994-2003      Consultant to the Science Advisory Board (SAB) of the U.S. Environmental  
Protection Agency (USEPA):  
- Health and Ecological Effects Subcommittee (HEES) of the Advisory Council  
on Clean Air Compliance Analysis (ACCACA) (1998-2003).

- Advisory Council on Clean Air Compliance Analysis Physical Effects Review Subcommittee (ACCACAPERS, formerly CAACACPERS) (1994-1997).  
1993 Scientific Advisor to Natural Resource Damage Assessment Trustees for Blackbird Mine, Idaho -- Research Review Meeting, Boulder, CO. December 13-14.

**Expert Witness:**

1995 Prepared a pre-trial expert narrative for a natural resource damage assessment case, in which federal and state trustees (National Oceanic and Atmospheric Administration, U.S. Department of Justice, U.S. Forest Service, and State of Idaho) sued Noranda Corporation for cleanup of an abandoned mine site in Idaho. This case was settled out of court before the trial began, with an overall projected value for cleanup and mitigation of about \$60 million.