UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Center for Coastal Environmental Health and Biomolecular Research
219 Fort Johnson Road
Charleston, South Carolina 29412-9110

Br 2

RECEIVED
REGION 1
2009 JAN 16 AM 11: 15

Division of Nuclear Materials Safety
U.S. Nuclear Regulatory Commission, Region I
475 Allendale Road
King of Prussia, PA 19406-1415

Dear Sir:

03017547

I am requesting Dr. Pat Fair be reinstated as a licensed user on our license # 39-19399-02 Section 11B. Due to reorganization within this laboratory Dr. Fair will be conducting research requiring the use of licensed materials. Enclosed is a CV of Dr. Fair's past experience in addition Dr. Fair is scheduled to take a 3 day refresher course. This course will be conducted by Engelhardt and Associates Inc. Radiation Consultants given in April 20-22 Charleston SC. Please refer to the course description and objects (attach 1) and Dr. Fair's CV (attach 2)

If further information is required please contact me at 843-762-8521 or email john.bemiss@noaa.gov

Sincerely;

John Bemiss

John Bemiss
RSO
1/13/09

143206

NMSS/RGN1 MATERIALS-002

NRC FORM 313 (4-2008) 10 CFR 30, 32, 33, 34, 35, 36, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR MATERIALS LICENSE

APPROVED BY OMB: NO. 3150-0120 EXPIRES: 10/31/2008

Estimated burden per response to comply with this mandatory collection request 4.4 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MISSISSIPPI, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
612 E. LAMAR BOULEVARD, SUITE 400
ARLINGTON, TX 76011-4125

030 17547

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S.NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

1. THIS IS AN APPLICATION FOR *(Check appropriate item)*

- [ ] A. NEW LICENSE
- [X] B. AMENDMENT TO LICENSE NUMBER 39-19399-02
- [ ] C. RENEWAL OF LICENSE NUMBER

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include ZIP code)*

US Dept of Commerce
NOAA
National Ocean Service
219 Fort Johnson Rd
Charleston SC 29412-9110

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

US Dept of Commerce
NOAA
National Ocean Service
CCEHRR
219 Fort Johnson Rd
Charleston SC 29412-9110

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

John Bemiss

TELEPHONE NUMBER

843-762-8251

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL
a. Element and mass number; b. chemical and/or physical form; and c. maiximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSE FEES *(See 10 CFR 170 and Section 170.31)*

FEE CATEGORY	AMOUNT ENCLOSED $

13. CERTIFICATION. *(Must be completed by applicant)* THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 39, AND 40, AND THAT ALL INFORMATION CONTANED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

CERTIFYING OFFICER -- TYPED/PRINTED NAME AND TITLE	SIGNATURE	DATE
John Bemiss RSO	X John Bemiss	1/13/09

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED $	CHECK NUMBER	COMMENTS
APPROVED BY				DATE	143206

Attach 1

Day One	Description	Objectives
07:30 – 8:00 a.m.	Continental Breakfast	Not Applicable (NA)
08:00 – 08:10	Seminar Objectives/Overview	Explain seminar objectives and meet trainers.
08:10 – 08:30	Radiation and Its Uses (Chapter 1) • Ionizing radiation and radioactive decay • Contemporary applications	Relate the basic properties of ionizing radiation. List common applications of ionizing radiation in industry, research and medicine.
08:30 – 08:50	Regulatory Agencies and Licensing (Chapter 2) • Where regulatory standards come from • NRC vs. Agreement States • Other agencies (e.g., OSHA, FDA, EPA, DOT)	Relate how the NRC regulations are developed. Define difference between Agreement vs. Non-Agreement states. Recognize how other agencies regulate radiation.
08:50 – 09:00	Break	NA
09:00 – 10:30	Radiation Physics (Chapter 5) • Atomic composition, structure, and terms • Radioactive decay and half-life • Properties of common decay products • Radioactive decay modes and schemes • Interactions with matter	Relate the basic atomic structure and common terms. Define half-life and radioactive decay. Describe basic properties of alpha, beta, x-ray, & gamma. Recognize the basic radioactive decay modes and emission characteristics. Compare interaction mechanisms (directly vs. indirectly ionizing).
10:30 – 11:30	Group Sessions	See Performance Objectives for Group
11:30 – 12:30 p.m.	Lunch	NA
12:30 – 01:00	Radiation Units (Chapter 6) • Exposure units • Dose and dose equivalent units • Energy transfer (LET, QF)	Identify the difference between exposure and dose. Relate the traditional and SI units for exposure (R C/kg), dose (rad, Gy), and dose equivalent (rem, Sv). Examine linear energy transfer and quality factors as these pertain to biological effectiveness.
01:00 – 01:20	Common Sources of Radiation (Chapter 6) • Naturally occurring • Medical	Relate typical levels of radiation from common sources.

Day One (continued)	**Description**	**Objectives**
01:20 – 01:30	Break	NA
01:30 – 02:20	Regulatory Dose Limits and Radiation Dosimetry (Chapter 7) • Dose limits (public vs. occupational) • Types of dosimeters; how they work • Personnel monitoring requirements • Dosimetry reporting requirements	Identify the regulatory dose limits for radiation workers, the embryo/fetus of a declared pregnant woman, and members of the public. Explain types of personnel dosimeters and their limitations. Relate monitoring and reporting requirements.
02:20 – 02:30	Break	NA
02:30 – 03:00	Radiation Biology (Chapter 9) • Cellular, tissue, and systemic effects • Delayed effects, early somatic effects • Acute radiation syndrome • Hormesis, threshold vs. non-threshold	Describe the biological effects of radiation and the dose levels where these effects occur. Contrast perceived vs. real risk.
03:00 – 04:00	Group Sessions	See Performance Objectives for Group

Day Two	**Description**	**Objectives**
07:30 – 08:00 a.m.	Continental Breakfast	NA
08:00 – 09:40 (10 min. break)	Radiation Detection and Measurement (Chapter 10) • Types of equipment • Appropriate uses • Demonstration of equipment • Self-reading dosimeters	Describe how to select and operate equipment for the different types of radiation. Identify the basic design principles of various detectors.
09:40 – 09:50	Break	NA
09:50 – 10:40	Radiation Protection (Chapter 11) • ALARA • Methods for protection • Posting and labeling requirements	Explain what ALARA is and how to implement. Describe methods used for radiation protection (e.g., time, distance, shielding, contamination control). Apply inverse square law. Recognize when and where to post signs and apply labels.

Day Two (continued)	Description	Objectives
10:40 – 11:30	Group Sessions	See Performance Objectives for Group
11:30 – 12:30 p.m.	Lunch	NA
12:30 – 01:30	Radiation Incidents and Emergency Response (Chapter 13) • Types (gauge, medical, academic) • Procedures • Source leakage, loss • Emergency personnel as responders • Performance based training • Interactions with public, media, and employees	Define the RSO's role in planning for and preventing accidents. Examine key components of an emergency plan.
01:30 – 01:40	Break	NA
01:40 – 02:30	Radiation Protection Programs (Chapter 3) • Written programs • Key elements (e.g., RSO/RSC, facility design, PPE, procedures, records, audits) • Annual reviews	Examine key elements of an effective radiation protection program. Assess record keeping requirements.
02:30 – 02:40	Break	NA
02:40 – 03:00	Responsibilities for Radiation Protection (Chapter 16) • Who is responsible • Legal issues	Relate various responsibilities for radiation protection and regulatory compliance.
03:00 – 04:00	Group Sessions	See Performance Objectives for Group

Day Three	Description	Objectives
07:30 – 08:00 a.m.	Continental Breakfast	NA
08:00 – 08:40	Packaging, Transport, and Receipt of Radioactive Materials (Chapter 15) • Shipper's responsibilities • Transportation regulations (NRC, DOT, IATA) • Classification and packaging • Transport on public roads • Receipt of radioactive materials	Define shipper's responsibilities and regulations affecting radioactive materials transportation. Describe basic packaging, marking, and labeling provisions for limited and Type A quantities. Describe DOT provisions for employee training and transport on public roads. Relate procedures for safe receipt of packages.
08:40 – 08:50	Break	NA
08:50 – 09:40	NRC Regulations (Chapter 2) • Part 19, Notices, Instructions to Workers • Part 20, Radiation Protection Standards • Parts 30-35, license types and provisions • Special requirements (gauges and licenses)	Identify critical provisions of Part 19 and 20 worker information and protection standards. Identify NRC license and registration requirements (e.g., exempt, general, specific). Interpret basic provisions for specific license categories (e.g., manufacture, broad scope, radiography, medical use, irradiators).
09:40 – 09:50	Break	NA
09:50 – 10:30	Regulatory Inspections (Chapter 17) • How to prepare for NRC/state inspections • How to deal with inspectors • What to do if the inspection is going badly • What to do if called for an enforcement conference • Interactions with the public and media	Relate the inspection process. Explain how to prepare for and respond to enforcement activities. Define the NRC's media notification criteria. Define key aspects of communicating with the public and media.
10:30 – 11:20	Group Sessions – Key aspects for writing a license • New, renewal, & amendment applications • Content, fees Reportable incident scenarios • When to/not to report an incident • Interactions with the public and media	Identify references available for assistance when writing a license (e.g., NRC Regulatory Guides). Identify key aspects (do's, don'ts) for writing a license. Discuss incident scenarios and Identify NRC requirements for reporting incidents and misadministrations (medical).
11:20 – 12:00	Group Sessions – Examination	Complete exam and score 85% or better.

Attach 2

CURRICULUM VITAE

PATRICIA A. FAIR

Work Address:

U.S. Dept. of Commerce, NOAA, National Ocean Service, Center for Coastal Environmental Health & Biomolecular Research (CCEHBR), 219 Fort Johnson Road, Charleston, SC 29412, *Phone: (843)762-8533;fax: (843)762-8700; email: pat.fair@noaa.gov*

Education:

1992	Ph.D	Clemson University, Clemson, South Carolina
1977	M.S.	University of Maryland, College Park, Maryland
1974	B.S.	University of Maryland, College Park, Maryland

Radiation Experience

I have been listed as a user on our NOAA CCEHBR Laboratory radiation license and I have had significant research experience utilizing radioisotopes since the inception of radiation license agreement with the Nuclear Regulatory Commission in the 1980s. During this time I have worked with a variety of radioactive materials as evidenced by several publications listed above include which include the use of radioisotopes in research studies including isotopes such as ^{14}C-leucine, ^{14}C-benzo(a)pyrene, ^{203}Hg, ^{51}Cr and ^{3}H chemicals. Formal radiation training was also received at the College of Charleston during 1981 in a course 'Nuclear and Radiation Chemistry'. Additionally, for over 20 years I have served as supervisor for CCEHBRs Radiation Safety Officer (RSO) thus, I have had significant involvement with the responsibilities required for the use and safety of radioactive materials for compliance with our license agreement with the Nuclear Regulatory Commission. After more than 20 years as an active user on our laboratory's radiation license I indicated during this past year in 2008 that I did not think there was a need to remain included as a radiation user in the laboratory's listing. However, this situation has now changed as we are planning on conducting cellular and immunological studies which require the use of radioisotopes. Thus, I would like to request reinstatement of my radiation user status.

Professional Employment and Honors

1992-1997	NOAA/National Ocean Service, Coastal Environmental Health and Biomolecular Research (CCEHBR), Program Manager, joint NOAA and National Institute of Health (NIH) Biomedical Test Material Program (omega-3 fatty acids), Charleston, SC
1993-1997	NOAA/National Ocean Service, Coastal Environmental Health and Biomolecular Research (CCEHBR) Division Chief, Program Manager for 3 Programs: 1) joint NOAA and National Institute of Health (NIH) Biomedical Test Material Program (omega-3 fatty acids); 2) Marine Biotechnology; 3) Marine Forensics/Marine Mammals, Charleston, SC
1993-2001	NOAA/National Ocean Service, Coastal Environmental Health and Biomolecular Research (CCEHBR)Program Manager for Marine Environmental Health Research Laboratory (renamed Hollings Marine Laboratory); scientific lead for design and construction of $24M multi-agency facility, Charleston, SC
1997- 2008	NOAA/National Ocean Service, Coastal Environmental Health and Biomolecular Research (CCEHBR) Branch Chief, Living Marine Resources, Charleston, SC

2008- present NOAA/National Ocean Service, Coastal Environmental Health and Biomolecular Research (CCEHBR) Program Director, Marine Mammal Program, Charleston, SC

Academic Affiliations

1992-present Adjunct Professor, Graduate Program in Marine Biology, College of Charleston, SC
1994- present Associate Professor, Marine Biomedical and Environmental Science, MUSC, Charleston, SC

Honors and Awards

1996 U.S. Department of Commerce Bronze Medal Award
2001 U.S. Department of Commerce Bronze Medal Award

Professional Memberships

1986 - present Sigma Xi Scientific Society
1996 - present Marine Mammal Society
2007 - present International Council on Exploration of the Seas (ICES)

Peer-Reviewed Publications (Selected from 90)

Mollenhauer, M.A.M. B. J. Carter, M. M. Peden-Adams, G. D. Bossart, **P. A. Fair**. 2008. Gene expression changes in bottlenose dolphin, *Tursiops truncatus*, skin cells following exposure to methyl mercury (MeHg) or perfluorooctane sulfonate (PFOS). Aquatic Toxicology doi:10.1016/j.aquatox.2008.09.013.

Adams, J, M. Houde, Derek Muir, G.Bossart, **P.A Fair**. 2008. Land use and the spatial distribution of perfluoroalkyl compounds as measured in the plasma of bottlenose dolphin (*Tursiops truncatus*). Marine Environmental Research 66:430–437.

Bossart, G.D, T. A. Romano, M.M. Peden-Adams, C.D. Rice, **P.A.Fair**, J.D. Goldstein, K. Cammen, J.S. Reif. 2008. Hematological, Biochemical and Immunological Findings in Atlantic Bottlenose Dolphins (*Tursiops truncatus*) with Orogenital Papillomas. Aquatic Mammals 34(2): 166-177.

Bossart, G.D., S-J. Ghim, M. Rehtanz, J. Goldstein, R. Varela, R.Y. Ewing, **P.A. Fair**, R. Lenzi, B. Joseph, L.S. Schneider, C.J. McKinnie, J.S. Reif, R. Sanchez, A. Lopez, S. Novoa, J. Bernal, M. Goretti, R.H. Defran and A.B. Jenson. 2006. Orogenital neoplasia in Atlantic bottlenose dolphins (*Tursiops truncatus*). Aquatic Mammals 31(4):473-480.

Dubey, J.P., **P.A. Fair**, N. Sundar, G. Velmurugan, O.C.H. Kwok, W. W. McFee, and C. Su. 2008. Isolation of *Toxoplasma Gondii* from bottlenose dolphins (*Tursiops truncatus*). Journal of Parasitology 94(4).

Harms, C.A., R.G. Maggi, E.B. Breitschwerdt, C.L. Clemons-Chevis, M. Solangi, D.S. Rotstein, **P.A. Fair**, L.J. Hansen, A.A. Hohn, G. G. Lovewell, W.A. McLellan, D.A. Pabst, T. K. Rowles, L.H. Schwacke, F.I. Townsend, R.S. Wells. Bartonella species detection in captive, stranded and free-ranging cetaceans. Veterinary Research 39:59.

Mendoza, L., A.F.F. Belone, R. Vilela, M. Rehantz, G.D. Bossart, J.S. Reif, **P.A. Fair**, W.N. Durden, J.St. Leger, L.R. Travassos, and P.S. Rosa. 2008. Western blotting analyses of the humoral immune response to *Lacazia loboi* antigens using sera from humans and dolphins with lacaziosis and sera from experimentally infected mice. Clinical and Vaccine Immunology, 15(1):164-167.

Montie, E.W., Scott R. Garvin, **Patricia A. Fair**, Gregory D. Bossart, Greg B. Mitchum, Wayne E. McFee, Todd Speakman, Vicke R. Starczak, Michael J. Moore, and Mark E. Hahn. 2007. Blubber morphology in wild bottlenose dolphins (*Tursiops truncatus*) from the southeast United States: Influence of geographic location, age class, and reproductive state. Journal of Morphology 269:496-511.

Murdoch, E., J.S. Reif, M. Mazzoil, S.D. McCulloch, **P.A. Fair**, G.D. Bossart. 2008. Lobomycosis in bottlenose dolphins (*Tursiops truncatus*) from the Indian River Lagoon, Florida: estimation of prevalence, temporal trends and spatial distribution. EcoHealth.

Rehantz, M, S. G.D. Bossart, B. Doescher, **P.A. Fair**, A.B. Jenson and S. Ghim. 2008. Bottlenose dolphin (*Tursiops truncatus*) papillomaviruses: vaccine antigen candidates and screening test development. Veterinary Microbiology. 2008.06.017.

Reif, J.S., **P.A. Fair**, B. Joseph, D.K. Kilpatrick, R. Sanchez, J.D. Goldstein, J. Adams, S.D. McCulloch, M. Mazzoil, E. Zolman, Hansen, L.J., and G.D. Bossart. 2008. Health status of Atlantic Bottlenose Dolphins (*Tursiops truncatus*) from the Indian River Lagoon, FL and Charleston, SC. Journal of the American Veterinary Association 233: 299-307.

Reif, J.S., M.M. Peden-Adams, T.A. Romano, C.D. Rice, **P.A. Fair**, G. Bossart. 2008.Immune Dysfunction in Atlantic Bottlenose Dolphins (*Tursiops truncatus*) with Lobomycosis. Journal of Clinical Microbiology, Infection and Immunity, Medical Mycology.

Stavros, H-C W., G.D. Bossart, T.C. Hulsey and **P. A. Fair**. 2008. Trace element concentrations in blood of free-ranging bottlenose dolphins (*Tursiops truncatus)*: influence of age, sex and location. Bulletin of Marine Pollution 56, 371-379.

Fayer, R., **P.A. Fair**, G.D. Bossart, and M. Santin. 2007. Examination of naturally-exposed bottlenose dolphins (*Tursiops truncatus*) for microsporidia, cryptosporidium, and giardia. Journal of Parasitology 94(1):143-147.

Montie, E.W., **P.A. Fair**, G.D. Bossart, G.B. Mitchum, M. Houde, D.C.G. Muir, R.J. Letcher, W.E. McFee, V.R. Starczak, A. Solow, J.J. Stegeman, and M.E. Hahn. 2008. Cytochrome P4501A1 Expression, Polychlorinated biphenyls and hydroxylated degradation products, and blubber dynamics of bottlenose dolphins from the southeast United States. Aquatic Toxicology 86:397-412.

Fair, P.A., D.C.G. Muir, J. Small, S. Sturman, J. Adams, M. Houde, G.D. Bossart. 2007. Tissue distribution of perfluoroalkyl compounds in bottlenose dolphins (*Tursiops truncatus*) from southeast coastal USA. Organohalogen Compounds 69:849-852.

Fair, P.A., G. Mitchum, T.C. Hulsey, J. Adams, E. Zolman, W. McFee, E. Wirth and G.D. Bossart. 2007. Polybrominated diphenyl ethers (PBDEs) in blubber of free-ranging bottlenose dolphins (*Tursiops truncatus*) from two southeast Atlantic coastal areas. Archives of Environmental Contamination and Toxicology 53, 483-494.

Stavros, Hui-Chen W., G.D. Bossart, T.C. Hulsey and **P. A. Fair.** 2007. Trace metal concentrations in skin of free-ranging bottlenose dolphin (*Tursiops truncatus*) from the southeast Atlantic coast. Science of the Total Environment 388, 300-315.

Greig, T.W., Bemiss, J.A., Lyon, B.A., Bossart, G.D. and **P.A. Fair**. 2007. Prevalence and diversity of antibiotic resistant *Escherichia coli* in bottlenose dolphins (*Tursiops truncatus*) from the Indian River Lagoon, Florida and Charleston Harbor area, South Carolina. Aquatic Mammals 33(2), 185-194.

Fair, P.A., T.C. Hulsey, R.A. Varela, J.D. Goldstein, J. Adams, E.S. Zolman and G.D. Bossart. 2006. Hematology, serum chemistry and cytology findings from apparently healthy Atlantic bottlenose dolphins (*Tursiops truncatus*) inhabiting the estuarine waters of Charleston, South Carolina. Aquatic Mammals. 32(2), 182-195.

Reif, J.S., Mazzoil, M.S., McCulloch S.D., Varela, R.A., **Fair, P.A.**, and Bossart, G.D. 2006. Lobomycosis in Atlantic bottlenose dolphins (*Tursiops truncatus*) from Indian River Lagoon, Florida. Journal of the American Veterinary Association 22B(1):104-108.

Bossart, G.D., S-J. Ghim, M. Rehtanz, J. Goldstein, R. Varela, R.Y. Ewing, **P.A. Fair**, R. Lenzi, B. Joseph, L.S. Schneider, C.J. McKinnie, J.S. Reif, R. Sanchez, A. Lopez, S. Novoa, J. Bernal, M. Goretti, R.H. Defran and A.B. Jenson. 2006. Orogenital neoplasia in Atlantic bottlenose dolphins (*Tursiops truncatus*). Aquatic Mammals 31(4):473-480.

Rehtanz, M. Ghim S., Rector, A., Ranst, M.V., **Fair, P.A.**, Bossart, G.D. and A.B. Jenson. 2006. Isolation and Characterization of the first American bottlenose dolphin papillomavirus: *Tursiops truncatus* Papillomavirus Type 2, TtPV2. Journal of Virology 87, 3559-3565.

Goldstein, J.D., E. Reese, J.S. Reif, R.A. Varela, S.D. McCulloch, R.H. Defran, **P.A. Fair** and G.D. Bossart. 2006. Hematologic, biochemical and cytologic findings from apparently clinically healthy Atlantic bottlenose dolphins (*Tursiops truncatus*) inhabiting the Indian River Lagoon. Journal of Wildlife Diseases 42(2), 447-454.

Houde, M., T.A.D. Bujas, J. Small, R. Wells, **P.A. Fair**, G. Bossart, K.R. Solomon, and D.C.G. Muir. 2006. Biomagnification of perfluoroalkyl compounds in the bottlenose dolphin (*Tursiops truncatus*) food web. Environmental Science and Technology 40, 4138-4144.

Houde, M, G. Pacepavicius, R.S. Wells, **P.A. Fair**, R.J. Letcher, M. Alaee, G.D. Bossart, A.A. Hohn, J. Sweeney, K.R. Solomon, D.C.G. Muir. 2006. Polychlorinated biphenyls (PCBs) and hydroxylated polychlorinated

biphenyls (OH-PCBs) in plasma of bottlenose dolphins (*Tursiops truncatus*) from the Western Atlantic and the Gulf of Mexico. Environmental Science and Technology 40:5860-5866

Dubey, J.P., **P.A. Fair**, G.D.Bossart, D. Hill, R. Fayer, C. Sreekumar, O.C. H. Kwok, and P. Thulliez. 2005. A Comparison of several serologic tests to detect antibodies to *Toxoplasma gondii* in naturally-exposed bottlenose dolphins (*Tursiops truncatus*). Journal of Parasitology 91(5):1074-1081.

Houde, M., R.S. Wells, **P.A. Fair**, G.D. Bossart, A.A. Hohn, T.K. Rowles, J.C. Sweeney, K.R. Solomon and D.C.G. Muir. 2005. Polyfluoroalkyl compounds in free-ranging bottlenose dolphins (*Tursiops truncatus*) from the Gulf of Mexico and the Atlantic Ocean. Environmental Science and Technology 39(17):6591-6598.

Yu, J., Mark S. Kindy, John E. Baatz, Margie Peden-Adams, Tara J. Ellingham, Daynna J. Wolff, **Patricia A. Fair**, and Sebastiano Gattoni-Celli. 2005. Establishment and characterization of epidermal cell cultures derived from the skin of the Atlantic bottlenose dolphin (*Tursiops truncatus*). Anatomical Record Anatomical Record. Part A-Discoveries in Molecular Cellular and Evolutionary Biology 287A(2):1246-1255.

Hansen, L. Schwacke, L.H.,Mitchum, G.B., Hohn A.A., Wells, R.S., Zolman, E.S., Rosel, P.E., **Fair, P.A.** 2004. Geographic variation in polychlorinated biphenyl and organochlorine pesticide concentrations in the blubber of bottlenose dolphins from the U.S. Atlantic coast. Science of the Total Environment 319:147-172.

Tittlemier, S., B. Asuncion Borrell, J. Duffe, P.J. Duignan, **P. Fair**, A. Hall, P. Hoekstra, K. Kovacs, M. Krahn, M. Lebeuf, C. Lydersen, D. Muir, T. O'Hara, M. Olsson, J. Pranschke, P. Ross, U. Siebert, G. Stern, S. Tanabe, and R. Norstrom. 2002. Global distribution of halogenated dimethyl bipyrooles in marine mammal blubber, Archives of Environmental Contamination and Toxicology 43:244-255..

Fair, P.A., and P. Becker. 2000. Stress in marine mammals. Invited Paper for special issue of Journal of Aquatic Ecosystem Stress and Recovery 7:335-354.

Beck, K.M., **Fair, P.**, McFee W., and Wolf, D. 1996. Heavy metals in tissues of bottlenose dolphins stranded along the South Carolina coast. Marine Pollution Bulletin 34:9;734-739.

Fair, Patricia H., James E. Balthrop, Joe L. Wade, and Sylvia Braddon-Galloway. 1987. *In vivo* incorporation of (^{14}C)-leucine into brain protein of mice treated with methylmercury and thiol complexes of methylmercury. *Toxicol. Letters*. 36:213-220.

Fair, P.H., J.E. Balthrop and S. Braddon-Galloway. 1987. The toxicity, distribution, and elimination of methylmercury in mice following intracerebral injection. *Neurotoxicol.* 8(2):281-290.

Fair, P.H. And A.R. Fortner. 1987. Effect of ingested benzo(a)pyrene and cadmium on tissue accumulation, hydroxylase activity and intestinal morphology of the black sea bass, *Centropristis Striata. Environ. Res.* 42:185-195.

Fair, P.H., J.E. Balthrop, J.F. Wade and S. Braddon-Galloway. 1986. Toxicity, distribution and elimination of thiol complexes of methylmercury after intracerebral injection. *J. Toxicol. Environ. Health* 19:219-195.

Balthrop, J.E., **Fair, P.H.** and S. Braddon-Galloway. 1986. Binding of methylmercury and methylmercury-Thiol complexes by myelin isolated from mice of differing selenium status. *Bull. Environ. Contam. Toxicol.* 37:783-790.

Fair, P.H. 1986. Interaction of benzo(a)pyrene and cadmium on GSH-S-transferase and Benzo(a)pyrene hydroxylase in the black sea bass (*Centropristis striata*). *Arch. Environ. Contam. Toxicol.* 15:257-263.

Fair, P.H., Dougherty, W.J. And S.A. Braddon. 1985. Methylmercury and selenium interaction in relation to mouse kidney γ-glutamyltranspeptidase, ultrastructure and function. *Toxicol. Appl. Pharmacol.* 80:78-96.

Book Chapters

Fair, P.A. 2000. Health-Related Parasites in Seafoods. And Allergies and Intolerances. In: Marine and Freshwater Products Handbook, Technomic Publishing Company, Inc., Lancaster, PA, pp. 761-182.

Research Support

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This is to acknowledge the receipt of your letter/application dated

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AMEND. 39-19399-02

☑ There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

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