

NRC FORM 313

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0120

EXPIRES: 06/30/2019

(10-2017)
10 CFR 30, 32,
33, 34, 35, 36,
37, 39, and 40



APPLICATION FOR MATERIALS LICENSE

Estimated burden per response to comply with this mandatory collection request: 4.3 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 Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@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 CURRENT VOLUMES OF THE NUREG-1556 TECHNICAL REPORT SERIES ("CONSOLIDATED GUIDANCE ABOUT MATERIALS LICENSES") FOR DETAILED INSTRUCTIONS FOR COMPLETING THIS FORM: <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1556/>. SEND TWO COPIES OF THE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

MATERIALS SAFETY LICENSING BRANCH
DIVISION OF MATERIAL SAFETY, STATE, TRIBAL AND RULEMAKING PROGRAMS
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
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PA 19406-2713

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

*Br. 2
03004675*

IF YOU ARE LOCATED IN:

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
1600 E. LAMAR BOULEVARD
ARLINGTON, TX 76011-4511

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

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

A. NEW LICENSE

B. AMENDMENT TO LICENSE NUMBER 20-08361-01

C. RENEWAL OF LICENSE NUMBER

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

Winchester Engineering and Analytical Center (WEAC)
Department of Health and Human Services
Food and Drug Administration
109 Holton Street Winchester Massachusetts 01890-1197

3. ADDRESS WHERE LICENSED MATERIALS WILL BE USED OR POSSESSED

FDA ORA WEAC,
109 Holton Street, Winchester, Massachusetts;
FDA ORA Northeast Lab,
158-15 Liberty Avenue, Jamaica, New York;
FDA CDER, 645 South Newstead Avenue, Saint Louis,

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Elon Malkin, Assistant Radiation Safety Officer

| | |
|---------------------------|------------------------------------|
| BUSINESS TELEPHONE NUMBER | BUSINESS CELLULAR TELEPHONE NUMBER |
| 781-756-9814 | 240-460-3141 |

BUSINESS E-MAIL ADDRESS

Elon.Malkin@fda.hhs.gov

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. maximum amount which will be possessed at any one time.

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

10. RADIATION SAFETY PROGRAM.

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

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

9. FACILITIES AND EQUIPMENT.

11. WASTE MANAGEMENT.

12. LICENSE FEES (Fees required only for new applications, with few exceptions*)
(See 10 CFR 170 and Section 170.31)
*Amendments/Renewals that increase the scope of the existing license to a new or higher fee category will require a fee.

| | |
|--------------|--------------------|
| FEE CATEGORY | AMOUNT ENCLOSED \$ |
|--------------|--------------------|

PER THE DEBT COLLECTION IMPROVEMENT ACT OF 1996 (PUBLIC LAW 104-134), YOU ARE REQUIRED TO PROVIDE YOUR TAXPAYER IDENTIFICATION NUMBER. PROVIDE THIS INFORMATION BY COMPLETING NRC FORM 531: <https://www.nrc.gov/reading-rm/doc-collections/forms/nrc531info.html>

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, 37, 39, AND 40, AND THAT ALL INFORMATION CONTAINED 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.

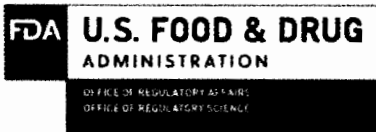
| | | |
|--|-------------------|------|
| CERTIFYING OFFICER -- TYPED/PRINTED NAME AND TITLE | SIGNATURE | DATE |
| Brian L. Baker, Director, WEAC | Brian L. Baker -S | |

Digitally signed by Brian L. Baker -S
DN: c=US, o=U.S. Government, ou=HHS, ou=FDA, ou=People,
cn=Brian L. Baker -S, 0.9.2342.19200300.100.1.1=2000359907
Date: 2018.07.03 15:24:06 -0400

FOR NRC USE ONLY

| TYPE OF FEE | FEE LOG | FEE CATEGORY | AMOUNT RECEIVED | CHECK NUMBER | COMMENTS |
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| APPROVED BY | | | | DATE | |
| | | | | | 609339 |

REC'D 10705 10PM 5/27



July 2, 2018

Licensing Assistance Team Division
of Nuclear Materials Safety
U.S. Nuclear Regulatory Commission, Region I
2100 Renaissance Boulevard
Suite 100
King of Prussia, PA 19406-2713

SUBJECT: License No. 20-08361-01; Request for License Amendment for the U.S. Food and Drug Administration
Winchester Engineering and Analytical Center; Radiation Safety Officer Change; Organizational Change

Dear Licensing Assistance Team:

Request the following amendment be made to our NRC License No. 20-08361-01:

1. Request to change our Radiation Safety Officer to Dr. Elon Malkin, Ph.D. Dr. Malkin has led our radiation safety program effectively since 2013, under the supervision of Mr. Edmond Baratta. During that period, we have noticed significant improvements to our radiation safety program, which have been recognized by the FDA Commissioner. See Attachment 1 for Dr. Malkin's C.V., certificates of successfully completed training (along with relevant syllabuses and course grades), and Delegation of Authority.
2. Our organizational structure, described in license renewal letter dated May 17th, 2016, has changed. The U.S. Food and Drug Administration's (FDA) Office of Regulatory Affairs (ORA) implemented a program-based management structure that aligns staff by FDA-regulated product. Attachment 2 describes how these changes affect the reporting structure for the Radiation Safety Officer and members of our Radiation Safety Committee.

Please contact Dr. Malkin if you have questions or need additional information.
He can be reached by phone at (781) 756-9814 or by email at Elon.Malkin@fda.hhs.gov.

Sincerely,

Brian L. Baker -S

Digitally signed by Brian L. Baker -S
DN: c=US, o=U.S. Government, ou=HHS,
ou=FDA, ou=People, cn=Brian L. Baker -S,
0.9.2342.19200300.100.1.1=2000359907
Date: 2018.07.03 15:31:07 -0400

Brian L. Baker, P.E.
Director, WEAC

U.S. Food and Drug Administration
Winchester Engineering & Analytical Center
109 Holton Street
Winchester, MD 01890
www.fda.gov

PERSONAL INFORMATION WAS REDACTED
BY NRC. NO COPY OF THIS INFORMATION
WAS RETAINED BY THE NRC.

Dr. Elon Malkin, Ph.D.

Day Phone: 781-756-9814

Email: Elon.Malkin@fda.hhs.gov

Work Experience: Food and Drug Administration (FDA) Department of Health and Human Services
109 Holton Street
Winchester, MA 01890 United States

2011 – Present
Chemist (Radiochemistry)

2013- Present
Assistant Radiation Safety Officer

Duties, Accomplishments and Related Skills:

Developed and Implemented FDA Office of Regulatory Affairs (ORA) Radiation Safety Policies, Methods, and Procedures with RSO approval:

Developed comprehensive radiation safety record keeping framework to keep easily accessible records pertaining to Nuclear Regulatory Commission (NRC), International Air Transport Association (IATA), and Department of Transportation (DOT) Regulations

Drafted FDA Staff Manual Guidance document defining FDA's policy for working with radioactive material to define regulations pertaining to specifically licensed (SL), generally licensed (GL), and exempt distributed (ED) radioactive material.

Developed framework that establishes clear roles of users, supervisors, sealed source monitors, IHS, and RSOs related to training, receiving, inventorying, leak testing, and disposing of generally licensed and exempt distributed radiological materials throughout FDA's ORA

Developed framework that establishes clear training requirements for ORA lab and field personnel who may be potentially exposed to ionizing radiation. This framework would train supervisors on identifying dosimetry and training needs of targeted employees throughout ORA

Authored or substantially revised ORA-Wide Standard Operating Procedures pertaining to radioactive materials and NRC Licenses. These documents include ORA's Radiation Safety Manual, ORA's Nickel-63 Wipe Program, and ORA's Dosimetry Program

Authored or substantially revised ORA WEAC Standard Operating Procedures and forms pertaining to WEAC's NRC License:

- Radiation Safety Manual
- Radioactive Waste Handling Procedure
- Radioactive Materials Shipping Form
- Radiation Safety Survey Form
- Radioactive Material Inventory and Receipt Records Form

Organized, Managed, Coordinated, and Evaluated ORA's Radiation Safety Program as Assistant Radiation Safety Officer with RSO approval:

Managed WEAC's NRC Type A specific license of broad scope, which covers source, special, and byproduct radioactive material, since 2013

Developed agendas, coordinated meetings, led discussions, and assigned action

items during WEAC's Radiation Safety Committee meetings to improve and evaluate WEAC's and ORA's Radiation Safety Program

Developed radiation safety documentation system to organize paper records and convert paper records to electronic format to the extent practically possible with Radiation Safety Officer oversight and approval

Compiled an inventory system (Microsoft Access and Excel based) to improve WEAC's management and tracking of radioactive materials

Streamlined the calibration schedule of various radiation safety monitoring devices used at WEAC and ORA

Routinely audited WEAC for compliance with NRC regulations and ORA policies and procedures

Organized an email system to monitor ORA personnel's dosimeter and pager requests and actively responded to requests and concerns using the dosimetry email account

Developed forms to conduct and document overexposure investigations for ORA lab and field personnel

Managed and conducted ORA's and WEAC's semi-annual radioactive material inventories that specify the licensure and regulations applicable to all radiological material including SL, GL, and ED radiological material

Coordinated ORA's Radioactive Waste Disposal and Radioactive Device returns at ORA WEAC, ORA Southeast Lab, ORA Northeast Lab, ORA Denver Lab, and FDA's Center for Drug Evaluation and Research (CDER) Lab in St. Louis.

Pro-actively initiated preventative actions to avoid Nickel-63 radioactive contamination incidents at FDA laboratories due to the presence of electron capture detectors (ECDs) in storage. Updated ECD inventory and disposed of unused ECDs by coordinating with lab personnel, device manufacturers, and radioactive waste disposal contractors

Investigation of Accidents involving Ionizing Radiation and Potential Overexposures with RSO approval:

Routinely conducted elevated radiation dose incident investigations for ORA laboratory and field personnel assigned dosimeters. Investigations include but are not limited to those personnel potentially exposed to radiological lab contamination and exposures encountered during radiopharmaceutical inspections. These investigations were conducted under Radiation Safety Officer oversight.

Routinely interviewed ORA personnel whose dosimeters register overexposures to account for potential dosimeter misuse or mishandling under Radiation Safety Officer oversight.

Coordinated decontamination efforts, bioassay, and investigational efforts at ORA Southeast Laboratory (ORA-SRL), provided radiation awareness presentation to the pesticide lab and a second presentation open to the entire facility, and prepared final report of ORA-SRL Radioactive decontamination to the NRC describing the cause and remediation of the contamination. Report used as evidence to release ORA-SRL from ORA NRC license.

Actively responded to potential contamination and exposure concerns since 2003 including potential Thorium contamination at ORA San Juan laboratory and potential Nickel-63 contamination at multiple ORA laboratories

Radiation Safety Teaching and Advisory Experience:

Expanded the radiation safety training program to include job-specific radiation safety training as well as training to review specific regulations applying to receiving, using, storing, surveying, shipping, and disposing of SL, GL, and ED radiological material.

Directed multiple ORA and FDA Labs through the process of disposing ECDs and other instruments containing Nickel 63. Since 2003, over fifteen unneeded nickel-63 detectors have been properly returned to the manufacturer, thereby reducing contamination risks to ORA laboratories and exposure risks to ORA employees

Advised ORA and FDA CDER Labs on disposal of Nickel-63 detectors and Natural Thorium and Uranium compounds

- **Radiation Safety Training Program Development for FDA and ORA Laboratory Personnel:**
 - Annual Radiation Safety Training for Radiation Workers
 - Annual Radiation Safety for non-Radiation Workers
 - Security Guard Radiation Awareness Training
 - Sample Custodian Radiation Safety Training
 - Organically-bound Tritium Radiation Safety Training
 - Nickel-63 Radiation Safety Training

- **Developed Specialized Training Programs for ORA Inspectors and Investigators:**
 - Radiation Awareness for NRC or State Regulated Facility inspections
 - Radiation Awareness for Positron emission tomography facility inspections
 - Radiation Awareness for Sterility facility inspections
 - Radiation Awareness for Import inspections
 - Radiation Awareness for Irradiator facility inspections
 - RH102 and RH04 Course: Radiation Safety and Occupational Dosimetry for ORA Field Personnel

Regulatory Knowledge and Compliance Experience:

Successfully applied for 2016 NRC license renewal by adequately describing ORA's radiation safety program, specifically describing the recent improvements to ORA's radiation safety program's policies and procedures. License now active until 2026

Authored and oversaw numerous NRC amendment requests including decommissioning surveys to publicly release ORA Laboratories that previously used SL radiological material

Prepared numerous notification letters per NRC regulations to inform the NRC of disposal and transfer of GL radiological material.

Surveyed and decontaminated WEAC and other ORA laboratories for alpha, low energy beta, beta, and gamma emitting radiological material. And prepared survey reports for NRC review and approval for public release. Applied NRC Annual limit of intake criteria to estimate doses based on potential inhalation or ingestions of contamination.

Provided radiation safety consulting knowledge to all ORA laboratories, ORA field personnel, and the CDER DPA in St Louis

Developed ORA's Radiation Safety Program that was audited by the NRC in 2015 with no violations identified. NRC inspectors commented that the ORA Radiation Safety Program is a "model program, within the top 10% of those inspected, and incorporates many best practices".

Developed ORA's Radiation Safety Program that was Audited by state of Massachusetts Radiation Protection program in 2016 and 2017 with no violations found.

Developed ORA's Radiation Safety Program that was Audited by CLYM environmental in 2014 with no violations found.

Prepared and submitted WEAC's Decommissioning funding plan in both 2013 and 2016—both accepted by NRC

Recognized the need to conduct MARSSIM survey on WEAC grounds slated for WEAC's new building. The Atomic Energy Commission used these grounds for Uranium processing in the 1950's. These grounds were not decommissioned to today's standards. Communicated with NRC who designated the grounds as requiring a substantial group 4 decommissioning and remediation.

Developed Historical Site Assessment of WEAC grounds per NRC guidance—submitted to NRC in 2016

Worked with 8a MARSSIM remediation contractor to prepare and develop Decommissioning Plans and Environmental Reports per NRC guidance. Submitted and initial review accepted by the NRC in 2017

Currently acting as Decommissioning Manager at WEAC for outside grounds remediation project. Coordinated communication between 8a contractor, WEAC personnel, and NRC representatives.

Prepared documentation for Rad Waste pickup for WEAC and ORA Northeast Laboratory from 2014 to 2017. All waste accepted by licensed recipients.

Technical Expertise with Advanced Analytical Instrumentation used to detect specific radionuclides and ionizing radiation fields:

Extensive experience with the use large complex instrumentation to quantify radiological material including whole body radiation counters, thyroid counters, gamma ray spectrometers, alpha spectrometers, gas proportional counters, liquid scintillation counters, inductively coupled plasma mass spectrometers, and gasless proportional counters, and associated software.

Extensive experience with the use portable handheld instrumentation for detecting radiation fields and contamination including scintillation detectors (zinc sulfide, sodium iodide, cesium iodide), Semiconductor detectors (Silicon detectors, High Purity Germanium), gas-filled detectors (various Geiger counters, gas proportional counters, pressurize ion chambers) and all associated software

Extensive experience with the use of air monitoring equipment including low volume and high volume air sample collectors and real-time radioactivity in air detectors.

Complex Analytical Protocol Development pertaining to Radionuclides used at WEAC:

Developed and validated a high throughput and rapid turnaround analytical method for quantifying thorium in matrices associated with complex FDA regulated medical devices using advanced analytical instrumentation, inductively coupled plasma mass spectrometry

Developed and validated method for analyzing Strontium-90 in the edible and non-edible portions of fish found in the freshwater bodies in Northern New England associated with the 2013 Vermont Yankee Nuclear Power Plant Study.

Developed a portable, robust, modular, and field-deployable system for gamma ray

radiation analysis with a leading gamma-ray spectrometer manufacturer. System capable of identifying and quantifying radionuclides such as Cs-134, Cs-137 and I-131 without the requirement of gamma-ray spectroscopy knowledge and experience from end-users while capable of achieving laboratory grade data quality objectives. Patent pending.

Responsible for statistical verification of new strontium-90 reduced reagent procedure, thereby reducing WEAC's mixed radiological waste output

Interviewed by A2LA accreditation body personnel in 2012 and 2014 and completed 2012 A2LA-accredited proficiency sample for gamma-ray radiation analysis and strontium-90

Completed Plutonium ICLN proficiency exercise for Plutonium-238, Plutonium-239, Plutonium-240

Analyzed emergency food samples for gamma radiation associated with the 2011 Japan Fukushima nuclear disaster

Analyzed routine imports and domestic samples for gamma radiation analysis and strontium-90 analysis

Analyzed routine market basket program samples for gamma-ray radiation analysis and strontium-90 analysis

Software, Programming, GIS, and Statistics Experience:

| | | |
|--|---|---|
| <i>Microsoft Office and Visual Basic</i> | <i>MATLAB, SAS, R</i> | <i>Statgraphics</i> |
| <i>Statistic 101 Resampling</i> | <i>Canberra Eclipse for proportional counters</i> | <i>Canberra Genie 2000 Gamma Spec</i> |
| <i>Canberra Apex Gamma Spec</i> | <i>Ludlum 375 radiation monitoring suite</i> | <i>Turbo FRMAC</i> |
| <i>Canberra Apex In-Vivo whole body counting</i> | <i>Canberra Geometry Editor for computational efficiencies Gamma Spec</i> | <i>Protean Instrument Proportional Counting</i> |

Awards:

2016 FDA Honors Individual Awards - FDA Commissioner's Special Citation For extraordinary work on improving ORA and WEAC's Radiation Safety Program

2016 ORA Group Award Portable Gamma Spectrometry Team

2016 ORA Group Award LB517 and LB523 Planning Group for Radiological FERN

2015 ORA Group Award Thorium-232 Method Development

2015 ORA Group Award FERN Gamma Proficiency Test

2015 ORA Group Award Food Emergency Response Network Alpha/Beta Exercise

2013 ORA Group Award Leveraging Collaboration Award Tri-State Fish Study

2012 ORA Group Award Combined Japan Emergency Response Team

Supervisor: Kenneth Crombie (240-402-5346)

Education: University South Florida Tampa, FL United States
Doctorate [REDACTED]
GPA: 4.0 of a maximum 4.0
Credits Earned: 162 Quarter hours
Major: Chemical Oceanography with focus on Biogeochemistry

Dissertation Title: The Economically Important Nitrogen Pathways of Southwest Florida

Identified the specific nitrogen sources that support primary production and ultimately fish production in watersheds dominated by agricultural landscapes and residential neighborhoods using stable isotopes of nitrogen

Major Advisor: Dr. David J. Hollander, Ph.D., Dr. Ernst B. Peebles, Ph.D.

University of Maryland College Park, MD United States
Bachelor's Degree [REDACTED]
GPA: 4.0 of a maximum 4.0
Credits Earned: 122 Quarter hours
Major: Biological Sciences
Honors: Summa Cum Laude

Job Related Training: Applied Health Physics, Oak Ridge Associated University (April, 2014). 200 hr. Certificate of Completion, Final Grade, and Syllabus included.

Radiation Safety Officer Training, Harvard University TH Chan School of Public Health (April 2017). 50 hr. Certificate of Completion and Syllabus included.

Radiation Safety Officer Training, Oak Ridge Associated University (June, 2014). 40 hr. Certificate of Completion and Syllabus included.

Packaging and Shipping Class 7 Radioactive Material (July 2017). 10 hr. Certificate of Completion, Final Grade, and Syllabus included.

Federal Radiological Monitoring and Assessment Center Turbo FRMAC training (November, 2016). 20 hr. Certificate of Completion and Syllabus included.

Shipping of Class 7 Radioactive Material, Radiation Safety Associates (November, 2014). 10 hr. Final Grade and Syllabus included.

Fundamentals of Analytical Radiochemistry, EPA (May, 2013). 40 hr. Certificate of Completion and Syllabus included.

Professional Publications and Presentations: Scott, T., Garnick, K., Wei, C., **Malkin, E.**, Szymanski, J., Nakazawa, D., Patil, A., Persson, H., Phillips, K. 2018. Characterization and application of cerium bromide spectrometers for analysis of γ -ray emitting radionuclides in food matrices. *Journal of Radioanalytical and Nuclear Chemistry* (submitted)

Wei, C., Garnick, K., Scott, T., **Malkin, E.**, Szymanski, J., Laskos, S., Raimondi, J., Cocks, J., Morris, K., Mueller, W., Zickefoose, J. 2017. A portable real-time in situ gamma-ray analysis system. *Applied Radiation and Isotopes* (in press)

Malkin, E., Garnick, K., Scott, T., Szymanski, J., Wei, C. 2016. Portable Gamma-ray Analysis System. 2016 Radiological Effluents and Environmental Workshop. Newport, RI.

Stafford P., Garnick, K., **Malkin, E.**, Scott, T., Wei, C. 2015. Rapid Detection of Thorium-232 in FDA Regulated Products. 5th Annual Foods and Veterinary Medicine Science and Research Conference. Silver Spring, MD.

- Professional Memberships and Committees:**
- Health Physics Society (2017-)
 - Radiological Health 102: Basic Radiation Safety Course Cadre (2017-)
 - LIMS Development Group for Radiological Material Inventory (2017-)
 - Radiological Health 104: Import Radiological Health Course Cadre (2015-)
 - ORA Team for US Government Accountability Office (GAO) for "Low-Dose Radiation: Interagency Collaboration on Planning Research Could Improve Information on Health Effects - Low Dose Exposure to Radiation and Chemicals"
 - WEAC Radiation Safety Committee (2013-)

References:

| Name | Employer | Title | Phone | Email |
|---------------------|---|---------------------|--------------|----------------------------|
| Brian Baker (*) | Food and Drug Administration Department of Health and Human Services | Laboratory Director | 781-756-9701 | Brian.Baker@fda.hhs.gov |
| Kenneth Crombie (*) | Food and Drug Administration Department of Health and Human Services | Program Manager | 240-402-5346 | Kennth.Crombie@fda.hhs.gov |
| Ernst Peebles (*) | University of South Florida | Associate Professor | 727-553-3983 | epeebles@mail.usf.edu |

(*) Indicates professional reference

ORAU

This is to certify that

Elon M. Malkin

has completed the

200-Hour Applied Health Physics Training Course

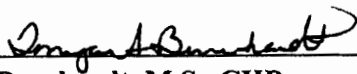
conducted by

the Professional Training Programs of ORAU



This 4th day of April 2014

in Oak Ridge, Tennessee



Tonya Bernhardt, M.S., CHP

May 20, 2014

Elon M. Malkin
FDA
WEAC
109 Holtom Street
Winchester, MA 01890

Dear Elon:

Thank you for attending the Applied Health Physics course held March 3–April 4, 2014. I am pleased to report that you have completed the course successfully. Your overall course grade was 97.

We enjoyed having you in Oak Ridge and look forward to seeing you again soon if an opportunity arises. Please remember to check our website at www.ornl.gov/ptp for course information and additional training opportunities.

Sincerely,



Justin Spence, B.S.
Health Physicist
Professional Training Programs

JS:kpm

APPLIED HEALTH PHYSICS

March 3 – April 4, 2014

Conducted By:

OAK RIDGE ASSOCIATED UNIVERSITIES
INDEPENDENT ENVIRONMENTAL ASSESSMENT AND VERIFICATION
PROFESSIONAL TRAINING PROGRAMS

Coordinated By:

Tonya Bernhardt, M.S., CHP, PTP Operations Manager

Professional Training Teaching Staff:

Tonya Bernhardt, M.S., CHP, Health Physicist; 865-241-6620; Tonya.Bernhardt@orau.org
Alex Boerner, M.S., CHP, Health Physicist; 865-574-0951; Alex.Boerner@orau.org
Manuel Díaz, B.S., Health Physicist; 865-576-6540; Manuel.Diaz@orau.org
Ben Estes, M.S., Health Physicist; 865-241-3841; Ben.Estes@orau.org
Paul W. Frame Ph.D., CHP, Health Physicist; 865-576-3388; Paul.Frame@orau.org
Derek Hagemeyer, B.S.N.E., Group Manager; 865-241-3615; Derek.Hagemeyer@orau.org
Glenn Hathaway, B.S., CNMT, Health Physicist; 865-576-6526; Glenn.Hathaway@orau.org
Steve Hutchison, Health Physics Technician; 865-574-9814; Steve.Hutchison@orau.org
Justin Spence, B.S., Health Physicist; 865-241-5087; Justin.Spence@orau.org
Timothy J. Vitkus, CHP, Survey Operations Director, IEAV; 865-576-5073; Tim.Vitkus@orau.org

Guest Lecturers:

Wade Ivey, IEAV Laboratory Manager
Randy Dillon, Manager, ORAU Transportation Services
Delis Maldonado, M.S., Health Physicist
Dana Willaford, RRPT

Support Staff

Kristy P. Mashburn, Registrar; 865-576-3576; Kristy.Mashburn@orau.org
Priscilla Witmer, Administrative Assistant II ; 865-576-6408 ; Priscilla.Witmer@orau.org

Visit our web page at www.orau.org/ptp

APPLIED HEALTH PHYSICS
First Week

| DATE | TIME | TOPIC | INSTRUCTOR(s) | LOCATION |
|-----------------------|----------|---|--------------------|----------|
| Monday, March 3 | 8:00 AM | Welcome and Registration | Staff | RM 135 |
| | 9:00 AM | INTRODUCTION TO RADIOACTIVITY AND RADIATION | BERNHARDT | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | INTRODUCTION TO RADIOACTIVITY AND RADIATION (Cont.) | BERNHARDT | RM 135 |
| | 2:30 PM | LABORATORY AND RADIATION SAFETY | SPENCE | RM 135 |
| | 3:30 PM | Problem Session 1: Calculator Problems | Spence | RM 135 |
| Tuesday, March 4 | 8:00 AM | DECAY RATES | FRAME | RM 135 |
| | 9:30 AM | INTERACTION OF CHARGED PARTICLES | FRAME | RM 135 |
| | 11:00 AM | GAMMA RAYS, CONVERSION ELECTRONS, X-RAYS AND AUGER ELECTRONS | FRAME | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | GAMMA RAYS, CONVERSION ELECTRONS, X-RAYS AND AUGER ELECTRONS (Cont'd) | FRAME | RM 135 |
| | 2:00 PM | COUNTING STATISTICS | SPENCE | RM 135 |
| | 3:15 PM | Demonstration: Cloud Chamber (CC-100) | Estes | RM 23 |
| | 3:30 PM | Lab: Counting Statistics (S-202) | Spence/Hutchison | RM 19 |
| Wednesday, March 5 | 8:00 AM | INTERACTIONS OF PHOTONS WITH MATTER | FRAME | RM 135 |
| | 9:00 AM | GAS DETECTORS | FRAME | RM 135 |
| | 10:30 AM | GEIGER MUELLER DETECTORS | FRAME | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | Lab G-M Counting I (GM-100.1, 101.1, 103.1, 104.1, 105.1, 106.1) | Hathaway/Hutchison | RM 144 |
| Thursday, March 6 | 8:00 AM | PROPORTIONAL COUNTERS | FRAME | RM 135 |
| | 9:00 AM | DOSIMETRIC QUANTITIES AND UNITS: EXPOSURE | FRAME | RM 135 |
| | 10:00 AM | DOSIMETRIC QUANTITIES AND UNITS: ABSORBED DOSE AND KERMA | FRAME | RM 135 |
| | 11:00 AM | DOSIMETRIC QUANTITIES AND UNITS: DOSE EQUIVALENT | FRAME | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | Problem Session 2 | Bernhardt | RM 135 |
| | 2:00 PM | Lab: Proportional Counting (PC-220, 222, 223) | Spence/ Hutchison | RM 22 |
| Friday March 7 | 8:00 AM | IONIZATION CHAMBERS | HATHAWAY | RM 135 |
| | 9:00 AM | SOLID SCINTILLATOR DETECTORS | SPENCE | RM 135 |
| | 10:30 AM | SURVEY METERS: INTRODUCTION | SPENCE | RM 135 |
| | 11:00 AM | POINT, LINE, PLANE, AND VOLUME SOURCES | BERNHARDT | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | Lab: G-M Counting II (GM-300.1, 303) | Hathaway | RM 144 |
| | 3:30 PM | Exam I | Spence | RM 135 |

APPLIED HEALTH PHYSICS
Second Week

| DATE | TIME | TOPIC | INSTRUCTOR(s) | LOCATION |
|------------------------|----------|--|----------------------|----------|
| Monday, March 10 | 8:00 AM | SURVEY METERS FOR SURFACE CONTAMINATION | FRAME | RM 135 |
| | 8:45 AM | SURVEY METERS FOR MEASURING EXPOSURE RATES | FRAME | RM 135 |
| | 10:30 AM | CALIBRATIONS OF SURVEY METERS (Part I) | SPENCE | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | Lab: Survey Instruments I (SI-101, 103) | Spence/Hathaway | RM 142 |
| | 2:45 PM | Lab: Survey Instruments II (SI-100, 100.1, 102) | Bernhardt/ Hutchison | RM 144 |
| Tuesday, March 11 | 8:00 AM | Exam Review | Spence | RM 135 |
| | 9:00 AM | NATURAL BACKGROUND AND MAN-MADE RADIOACTIVITY | BERNHARDT | RM 135 |
| | 10:30 AM | CALIBRATION OF SURVEY METERS (Part II) | SPENCE | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | Lab: α and β Instrument Calibration (SI-106) | Hathaway | RM 144 |
| | 2:45 PM | Lab: γ Instrument Calibration (γ) (SI-107) | Spence/Hutchison | RM 142 |
| Wednesday, March 12 | 8:00 AM | THE CONCEPT OF RADIONUCLIDE EQUILIBRIUM | FRAME | RM 135 |
| | 9:30 AM | GAMMA SPECTROSCOPY OVERVIEW | FRAME | RM 135 |
| | 11:00 AM | GAMMA SPECTRUM FEATURES | FRAME | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | Lab: Gamma-Ray Spectroscopy I (SD-210, 211, 213) | Spence/ Hathaway | RM 19 |
| | 2:45 PM | Lab: Low Energy Spectral Features (SD-257) | Spence/ Hathaway | RM 19 |
| Thursday, March 13 | 8:00 AM | SEMICONDUCTOR DETECTORS | FRAME | RM 135 |
| | 10:30 AM | Lab: High Resolution Gamma-Ray Spectroscopy (GE-210, 211, 213) | Spence/Hutchison | RM 19 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | Lab: High Energy Spectral Features (SD-251) | Spence/Hutchison | RM 19 |
| | 2:00 PM | Lab: High Resolution Gamma-Ray Spectrometry (SD-260) | Spence/Hutchison | RM 19 |
| | 4:15 PM | Demo: Well Detector Spectral Features | Spence | RM 19 |
| Friday, March 14 | 8:00 AM | X-RAY FLUORESCENCE | ESTES | RM 135 |
| | 8:30 AM | Lab: X-ray Fluorescence (XRF-200, 214) | Estes | RM 19 |
| | 9:30 AM | Problem Session 3 | Hathaway | RM 135 |
| | 10:30 AM | Lab: Walkover Survey (ST-103) | Spence/Hathaway | RM 142 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | Computerized Gamma Spectroscopy (GE-215) | Spence/Hutchison | RM 19 |
| 3:30 PM | Exam II | Spence | RM 135 | |

APPLIED HEALTH PHYSICS
Third Week

| DATE | TIME | TOPIC | INSTRUCTOR(s) | LOCATION |
|------------------------|----------|---|--------------------------------|------------------|
| Monday, March 17 | 8:00 AM | SHIELDING RADIATION | FRAME | RM 135 |
| | 9:30 AM | CRITICAL LEVELS, DETECTION LIMITS, MINIMUM DETECTABLE ACTIVITIES | FRAME | RM 135 |
| | 11:00 AM | RADIATION PROTECTION REGULATIONS AND STANDARDS | SPENCE | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | Lab: Radiation Shielding (AC-200) | Bernhardt/ Hutchison | RM 19 |
| | 2:30 PM | Lab: Half-Life of Long-lived Nuclide (GM-107.1) | Frame | RM 144 |
| Tuesday, March 18 | 8:00 AM | INDUSTRIAL USES OF RADIATION | SPENCE | RM 135 |
| | 9:30 AM | Exam Review | Spence | RM 135 |
| | 10:30 AM | SEALED SOURCE DESIGN, TESTING, AND LEAK TESTING | BERNHARDT | RM 135 RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | Lab: Alpha Spectroscopy (APS-100, 101, 102, 103) | Spence/Hathaway | RM 19 |
| | 2:45 PM | Lab: Protective Clothing (PPE-100 Hand-Held Identifiers SD-300) | Estes/Bernhardt/ Hutchison | RM 24/144 |
| Wednesday, March 19 | 8:00 AM | ACCELERATORS | HATHAWAY | RM 135 |
| | 9:30 AM | X-RAY PRODUCTION | BERNHARDT | RM 135 |
| | 11:00 AM | Problem Session 4 | Bernhardt | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | TRANSPORTATION REGULATIONS | DILLION | RM 135 |
| | 3:00 PM | RESRAD, COMPLY and Microshield Demo | Maldonado/Spence/ Bernhardt | RM 135 |
| Thursday, March 20 | 8:00 AM | RADIATION SURVEYS | BERNHARDT | RM 135 |
| | 9:00 AM | Lab: Techniques and Sample Preparation (LT-100, LSC-203) | Spence/Hutchison | RM 137 |
| | 11:30 AM | Lunch | | |
| | 12:30 PM | Lab: Contamination Survey (ST-102.1) | Bernhardt/Hathaway | RM 137 |
| | 2:15 PM | LIQUID SCINTILLATION COUNTING | SPENCE | RM 135 |
| | 3:15 PM | Lab: Liquid Scintillation Counting (LSC-203) | Spence/Hutchison | RM 19 |
| Friday, March 21 | 8:00 AM | EFFECTS OF RADIATION AT A CELLULAR LEVEL | FRAME | RM 135 |
| | 9:30 AM | ACUTE (EARLY) EFFECTS OF RADIATION | FRAME | RM 135 |
| | 11:00 AM | DELAYED (LATE) EFFECTS OF RADIATION | FRAME | RM 135 |
| | 12:00 N | Radon Canisters and Electrets (AS-209, 111) | Hathaway | RM 19 |
| | 12:30 PM | Lunch | | |
| | 1:30 PM | PREPARING FOR RADIATION EMERGENCIES/ RADIATION ACCIDENTS | REAC/TS Staff | REAC/TS |
| | 2:30 PM | Tour: REAC/TS | REAC/TS Staff | REAC/TS |
| | | NO EXAM THIS WEEK | | |

APPLIED HEALTH PHYSICS
Fourth Week

| DATE | TIME | TOPIC | INSTRUCTOR(s) | LOCATION |
|------------------------|----------|--|--------------------|-----------|
| Monday, March 24 | 8:00AM | RADON AND ITS DECAY PRODUCTS | FRAME | RM 135 |
| | 10:00 AM | THERMOLUMINESCENT, FILM, AND OSL DOSIMETRY | FRAME | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | Lab: TLD Systems (TLD-202, 203) | Hathaway | RM 23 |
| | 3:00 PM | Lab: Floor Monitoring (ST-103.2,103.3) | Spence/Hutchison | RM 19 |
| Tuesday, March 25 | 8:00 AM | RADON II | FRAME | RM 135 |
| | 9:00 AM | NUCLEAR POWER OVERVIEW | DIAZ | RM 135 |
| | 10:45 AM | AIR SAMPLING INTRODUCTION | HATHAWAY | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | Lab: Electronic Calibration and Coincidence | Estes | RM 142/22 |
| | 3:00 PM | Lab: Film Dosimetry (FD-100, 101) | Hathaway | RM 24 |
| Wednesday, March 26 | 8:00 AM | AIR SAMPLING EQUATIONS | HATHAWAY | RM 135 |
| | 9:30 AM | FUME HOOD DESIGN AND TESTING | FRAME | RM 135 |
| | 11:00 AM | Problem Session 5 (Air Sampling) | Frame | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | AIR SAMPLER CALIBRATION | BERNHARDT | RM 135 |
| | 2:30 PM | Lab: Air Sampler Calibration (ASC-101, 102) | Bernhardt | RM 23 |
| Thursday, March 27 | 8:00 AM | STACK SAMPLING | FRAME | RM 135 |
| | 10:00 AM | ATMOSPHERIC DISPERSION | FRAME | RM 135 |
| | 11:30 AM | Lunch | | |
| | 12:30 PM | EXTERNAL DOSIMETRY | BERNHARDT | RM 135 |
| | 1:30 PM | Lab: Radon Charcoal Canisters and Electrets (AS-109,111) | Hathaway/Bernhardt | RM 19 |
| | 2:30 PM | Lab: Ventilation System Testing (VS-100) | Spence/Hathaway | RM 137 |
| Friday, March 28 | 8:00 AM | INTERNAL DOSIMETRY | HATHAWAY | RM 135 |
| | 11:00 AM | BIOASSAY | HATHAWAY | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | Problem Session 6 (Internal Dosimetry) | Bernhardt | RM 135 |
| | 2:00 PM | RESPIRATORY PROTECTION | SPENCE | RM 135 |
| | 3:30 PM | Exam III | Spence | RM 135 |

APPLIED HEALTH PHYSICS
Fifth Week

| DATE | TIME | TOPIC | INSTRUCTOR(s) | LOCATION |
|-----------------------|----------|---|--------------------|----------|
| Monday, March 31 | 8:00AM | NEUTRON SOURCES | BERNHARDT | RM 135 |
| | 9:00 AM | INTERACTIONS OF NEUTRON WITH MATTER | BERNHARDT | RM 135 |
| | 10:30 AM | NEUTRON DETECTORS | BERNHARDT | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | Lab: BF ₃ Detectors (N-100, 101, 102, 103, 106) | Bernhardt/Hathaway | RM 142 |
| | 2:45 PM | Lab: Air Sampling (Radon Daughters) (AS-103) | Spence | RM 144 |
| Tuesday, April 1 | 8:00 AM | NEUTRON ACTIVATION AND ACTIVATION ANALYSIS | BERNHARDT | RM 135 |
| | 9:00 AM | Lab: Neutron Activation Analysis (NAA-103.3) | Bernhardt/Hathaway | SC 300 |
| | 10:30 AM | Lab: Neutron Survey Meter Calibration (NS-108) Bonner Spheres (N-108) | Spence/Hathaway | RM 142 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | Lab: Neutron Fluence Rate Measurements (NAA-104) | Spence/Hathaway | RM 19 |
| | 2:30 PM | Review of Course Exams/Lab Exercises (Optional) | Staff | RM 135 |
| Wednesday, April 2 | 8:00 AM | ENVIRONMENTAL SURVEILLANCE (MONITORING) PROGRAMS | FRAME | RM 135 |
| | 10:00 AM | ENVIRONMENTAL SAMPLE COLLECTION | FRAME | RM 135 |
| | 11:00 AM | SAMPLE PROCESS | IVEY | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | RADIOLOGICAL SURVEY TYPES IN SUPPORT OF DECOMMISSIONING | VITKUS | RM 135 |
| | 2:00 PM | Lab: Comprehensive Lab Practical | Staff | TBD |
| Thursday, April 3 | 8:00 AM | RADIONUCLIDE PATHWAYS | FRAME | RM 135 |
| | 9:00 AM | RADIOACTIVE WASTE | DIAZ | RM 135 |
| | 10:30 AM | MEDICAL USES OF RADIATION | HATHAWAY | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | RADIOACTIVITY IN CONSUMER PRODUCTS | FRAME | RM 135 |
| Friday, April 4 | 8:00 AM | Comprehensive Final Exam | Spence | RM 135 |
| | 10:00 AM | Course Critiques | Staff | RM 135 |
| | 10:30 AM | Commencement | Staff | RM 135 |



This is to certify that

Elon Malkin

has completed the

40-Hour Radiation Safety Officer Training Course

conducted by

the Professional Training Programs of ORAU



This 20th day of June 2014

in Oak Ridge, Tennessee

A handwritten signature in black ink, appearing to be "G. Hathaway", is written over a horizontal line.

Glenn Hathaway, M.S., CNMT

RADIATION SAFETY OFFICER

June 16-20, 2014

Coordinated By:

Glenn Hathaway, M.S., CNMT, Health Physicist

Conducted By:

OAK RIDGE ASSOCIATED UNIVERSITIES
INDEPENDENT ENVIRONMENTAL ASSESSMENT AND VERIFICATION
PROFESSIONAL TRAINING PROGRAMS

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Guest Lecturers:

Mark Jenkins, PhD, Industrial Hygienist/Health Physicist – REACT/S
Ken Miller, CHP, Emeritus Professor of Radiology/RSO Penn State Hershey Medical Center/
Associate RSO Penn State University
Randy Dillon, Manager, ORAU Transportation Services

Support Staff:

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RADIATION SAFETY OFFICER TRAINING

June 16-20, 2014

| DATE | TIME | TOPIC | INSTRUCTOR(S) | LOCATION |
|-----------------------|-----------------------------------|---|-------------------------------|------------|
| Monday, June 16 | 8:00 AM | Welcome and Registration | Staff | RM 135 |
| | 9:00 AM | RADIATION SOURCES AND EQUIPMENT | HATHAWAY | RM 135 |
| | 10:30 AM | SURVEY INSTRUMENTS | SPENCE | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | Survey Instrument Labs (SI-100, 100.1, 101, 102) | Hathaway/Hutchinson | RM 142/144 |
| | 2:30 PM | LIQUID SCINTILLATION COUNTING | SPENCE | RM 135 |
| | 3:30 PM | Liquid Scintillation Counting Lab (LSC-203) | Spence | RM 135/19 |
| Tuesday, June 17 | 8:00 AM | SEALED SOURCE DESIGN AND LEAK TESTING | BERNHARDT | RM 135 |
| | 9:00 AM | Sealed Source Leak Testing Lab | Spence | |
| | 10:30 AM | CALIBRATION OF SURVEY INSTRUMENTS | SPENCE | RM 135 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | Instrument Calibration – Alpha and Beta Counters (SI-106) | Hathaway | RM 135 |
| | 2:45 PM | Instrument Calibration – Ionization Chambers (SI-107) | Spence/Hutchinson | RM 142 |
| Wednesday, June 18 | 8:00 AM | REGULATIONS | SPENCE | RM 135 |
| | 9:00 AM | RADIATION SURVEYS | SPENCE | RM 135 |
| | 10:00 AM | TRANSPORTATION OF RADIOACTIVE MATERIALS | DILLION | RM 135 |
| | 11:00 AM | Shipping RAM Packages (ST-105) | Spence | RM 135 |
| | | Receiving RAM Packages (ST-106) | Spence | RM 144 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | CHALLENGES FOR THE HP IN RADIATION ACCIDENT MANAGEMENT | JENKINS | RM 135 |
| | 2:00 PM | ORGANIZATIONAL STRUCTURE/COMMITTEES | MILLER | RM 135 |
| | 2:45 PM | RECORD KEEPING AND INVENTORY CONTROL | MILLER | RM 135 |
| 3:30 PM | SECURITY OF RADIOACTIVE MATERIALS | MILLER | RM 135 | |
| Thursday, June 19 | 8:00 AM | COMMUNICAITON AND TRAINING | MILLER | RM 135 |
| | 8:45 AM | INSPECTIONS/AUDITS | MILLER | RM 135 |
| | 9:30 AM | Floor Monitoring (ST-103.2) | Bernhardt/Hutchinson | RM 19 |
| | 10:30 AM | Contamination Surveys (ST-102.1) | Hathaway/Spence | RM 137 |
| | 12:00 PM | Lunch | | |
| | 1:00 PM | GAMMA SPECTROSCOPY OVERVIEW | SPENCE | RM 135 |
| | 2:15 PM | Gamma Spectroscopy Labs (HPGe Energy Calibration and Identification of Unknowns) | Spence/Hathaway Hutchinson | RM 19 |
| Friday, June 20 | 8:00 AM | RADIOACTIVE WASTE | SPENCE | RM 135 |
| | 9:00 AM | DOSIMETRY PROGRAM REQUIREMENTS | BERNHARDT | RM 135 |
| | 10:00 AM | EMERGENCY PLANNING | SPENCE | RM 135 |
| | 11:00 AM | Internet Resources | Staff | |
| | 11:30 AM | Course Critique and Adjour | Staff | RM 135 |



**HARVARD
T.H. CHAN**
SCHOOL OF PUBLIC HEALTH

This is to certify that

Elon Malkin, PhD

has participated in

Radiation Safety Officer Training for Laboratory Professionals

April 24–28, 2017

conducted by

Center for Executive and Continuing Professional Education

Dr. Edward F. Maher, ScD, CHP
Program Director
Harvard T.H. Chan School of Public Health

John E. McDonough, DrPH, MPA, Professor
Director, Executive and Continuing Professional Education
Harvard T.H. Chan School of Public Health



Radiation Safety Officer Training for Laboratory Professionals

| Monday, April 24, 2017 | Tuesday, April 25, 2017 | Wednesday, April 26, 2017 | Thursday, April 27, 2017 | Friday, April 28, 2017 |
|--|--|---|--|---|
| | 7:30-8:00 AM Continental Breakfast | 7:30-8:00 AM Continental Breakfast | 7:30-8:00 AM Continental Breakfast | 7:30-8:00 AM Continental Breakfast |
| 7:45-8:15 AM Check-In and Continental Breakfast | | | | |
| 8:15-8:30 AM Classroom Technology Orientation | | | | |
| 8:30-9:00 AM Welcome, Program Objectives, and Overview Edward F. Maher | 8:00-9:45 AM Radiation Protection Standards, 10 CFR Part 19 and 20 Edward F. Maher | 8:00-10:00 AM Introduction to Liquid Scintillation Counting, Instrumentation, Standards, Quenching and Instrument QA/QC Corinne Mitchell | 8:00-10:00 AM Introduction to Radioactive and Mixed Waste Management, Status of National Low-Level Radioactive Waste Policy Act Edward F. Maher | 8:00-9:45 AM Air Sampling for CHIPS Nicholas M. Panzarino |
| 9:00-9:45 AM Atomic Structure and Radioactivity Nicholas M. Panzarino | | | | |
| 9:45-10:15 AM Radiation Quantities and Units Nicholas M. Panzarino | 9:45-10:00 AM Refreshment Break | 10:00-10:15 AM Refreshment Break | 10:00-10:15 AM Refreshment Break | 9:45-10:00 AM Refreshment Break |
| 10:15-10:30 AM Refreshment Break | 10:00-11:00 AM Compliance with Effluents Release Limits (Air and Water) Christopher B. Martel | 10:15-12:00 NOON Radiation Hazard Assessment, Instrument Surveys, Counting Statistics, Contamination Levels, Wipe Testing, and Documentation Corinne Mitchell | 10:15-11:30 PM Waste Minimization and Volume Reduction Practices, Waste Management Brokers and Service Vendors, Disposal Edward F. Maher | 10:00-11:30 AM Employee Bioassay Programs Nicholas M. Panzarino |
| 10:30-11:15 AM Radiation Interaction with Matter, Types, and Sources of Radiation Edward F. Maher | | | | |
| 11:15-12:00 NOON Biological Effects of Radiation, Understanding Risks of Radiation Edward F. Maher | 11:00-12:00 NOON Recordkeeping and Retention for Compliance Demonstration Christopher B. Martel | | | |
| | | | 11:30-12:30 PM Lunch | 11:30-12:30 PM Lunch |
| 12:00-1:00 PM Lunch | 12:00-1:00 PM Lunch | 12:00-1:00 PM Lunch | | |
| 1:00-2:00 PM Risks to the Pregnant Worker, Radiation Risk Communication Edward F. Maher | 1:00-3:00 PM Preparing for License Inspection, Notice of Violation and Penalties Edward F. Maher | 1:00-3:00 PM Hand-Held Instruments and Surveys Christopher B. Martel | 12:30-2:30 PM Transportation of Radioactive Materials, Procurement, and Receipt of Radioactive Material I Sean M. Austin | 12:30-2:30 PM Security and Protection of Radioactive Materials Edward F. Maher |
| 2:00-3:00 PM Radiation Exposure Control: Time, Distance, and Shielding Nicholas M. Panzarino | | | 2:30-2:45 PM Refreshment Break | 2:30-2:45 PM Refreshment Break |
| 3:00-3:15 PM Refreshment Break | 3:00-3:15 PM Refreshment Break | 3:00-3:15 PM Refreshment Break | 2:45-4:00 PM Transportation of Radioactive Materials, Procurement and Receipt of Radioactive Material II Sean M. Austin | 2:45-4:00 PM Management Systems in Radiation Protection, Audits, License Renewal, Procedures, Training and Technical Resources for the RSO Edward F. Maher |
| 3:15-5:00 PM External and Internal Dosimetry: Regulatory and Other Practical Considerations Nicholas M. Panzarino | 3:15-4:45 PM Survey Documentation, Contamination Control, Good Practices and Employee PPE Christopher B. Martel | 3:15-5:15 PM Liquid Scintillation Laboratory Counting Corinne Mitchell | 4:00-5:15 PM Inventory Control of Radioactive Materials; Response to Personnel Contamination Incidents Sean M. Austin | 4:00-4:30 PM Program Evaluation and Closing Edward F. Maher |
| | 4:45-5:15 PM Skin Dose from Radioactive Contamination Christopher B. Martel | | | 4:30 PM Regular Sessions Program Adjournment |
| | 5:15 PM Regular Sessions End | 5:15 PM Regular Sessions End | 5:15 PM Regular Sessions End | |
| | 5:45-7:45 PM Optional Session: Medical Health Physics (Part 35) Christopher B. Martel OR Optional Session: Laser Hazard Control (ANSI 136.1-2009) Edward F. Maher | 5:45-7:45 PM Optional Session: Liquid Scintillation Counting Practical Corinne Mitchell OR Optional Session: Hand-Held Instruments Practical Christopher B. Martel | 5:45-7:45 PM Optional Session: DOT Radioactive Materials Shipping Certification (Part I) Sean M. Austin OR Optional Session: X-Ray Radiation Safety Christopher B. Martel | 5:00-7:00 PM Optional Session: DOT Radioactive Materials Shipping Certification (Part II) Sean M. Austin |

U.S. Environmental Protection Agency

Certificate of Completion

Elon Malkin

In Recognition of Successful Completion of Course Entitled:

*A Basic Course in the Fundamentals of Analytical Radiochemistry
held May 6-10, 2013, in Montgomery, AL.*

**This class is worth 3.2 CEUs.*

John Griggs

John Griggs, Director

*National Analytical Radiation Environmental Laboratory
U.S. Environmental Protection Agency*



May 10, 2013

Date

A Basic Course in the Fundamentals of Radiochemistry
U.S. Environmental Protection Agency
National Analytical Radiation Environmental Laboratory
Montgomery, AL

Agenda

Monday

- 8:00 Welcome and Introductions
8:30 1. Introduction to Radioactivity
10:00 Break
10:15 *Introduction to Radioactivity (Continued)*
11:30 Lunch
12:30 2. Liquid Scintillation Counting – Theory of Analysis
2:00 3. Tritium Analysis by Liquid Scintillation Counting (EPA Method 906.0)
3:00 4a. Radiometric Measurements and Interferences
3:30 Break
3:45 *4a. Radiometric Measurements and Interferences (Continued)*
4:30 Adjourn for Monday (Questions welcome)

Tuesday

- 8:00 4b. Solubility and Precipitation
9:00 4c. Oxidation and Reduction (“Redox”)
9:45 4d. Complexation
10:00 Break
10:15 4e. Solvent Extraction and Ion Exchange
11:30 Lunch
12:30 4f. Carriers, Tracers, and Yield Corrections
1:30 5. Gas-Filled Detectors and Gas Flow Proportional Counting (GPC)
2:30 Break
2:45 6. Measurement of Gross Alpha and Beta Radioactivity (EPA Method 900.0)
4:00 Adjourn for Tuesday (Questions welcome)

Wednesday

- 8:00 7. Radium-228 Analysis (EPA Method 904.0)
9:00 8. Alpha Spectrometry
10:00 Break
10:15 9. Isotopic Uranium by Alpha Spectrometry (ASTM Method D3972)
11:00 10. Sample Preservation and Sample Pretreatment and Preparation
12:00 Lunch
1:00 11. Statistics Unique to Radiochemical Applications
2:30 Break
2:45 11. Statistics Unique to Radiochemical Applications (Continued)
3:15 12. Radium-226 by Alpha Scintillation (EPA Method 903.1)
4:00 Adjourn for Wednesday (Questions welcome)

Thursday

- 8:00 13. Gamma Spectrometry
10:15 Break

10:30 14. Gamma Spectrometry (EPA Method 901.0)
11:30 Lunch
12:30 15. Quality Assurance in Radiochemical Analysis: Overview of Requirements for the Laboratory
1:30 16. Quality Assurance for Standards and Equipment (Non-Counting) in Radiochemical Analysis
2:30 Break
3:00 Laboratory tours (Counting Room, Emergency Ops Center, Mobile Laboratory, Separations)
4:00 Adjourn for Thursday (Questions welcome)

Friday

8:00 17a. Radioanalytical Needs Following a Radiation Incident
8:45 17b. Directed Exercise: Introduction of Drinking Water Contamination Scenario (Sample Control)
9:35 17c. The Data Quality Objectives/Masurement Quality Objectives Process
10:05 17d. Methods for Incident Response Applications
10:35 Break
10:50 17e. Directed Exercise: Continuation of Drinking Water Scenario (Screening for Prioritization)
11:30 Lunch
12:30 17f. Radiation Protection and Contamination Controls in a Radioanalytical Laboratory
1:00 17g. Maintaining Quality Control During Incident Response Operations
1:30 17h. Managing Operational Resources During Incident Response Support
2:00 17i. Incident Response Laboratory Analysis: Protocol Paradigm Shift
2:30 Break
2:45 17j. Directed Exercise: Completion of Prioritization of Samples Through Scenario 1
4:00 Adjourn

Federal Radiological Monitoring and Assessment Center
FRMAC

Certificate of Completion


is hereby granted to:

Elon Malkin

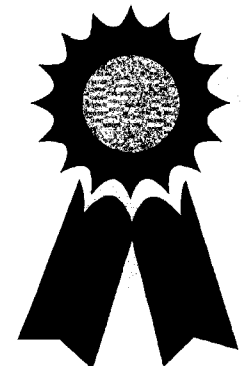
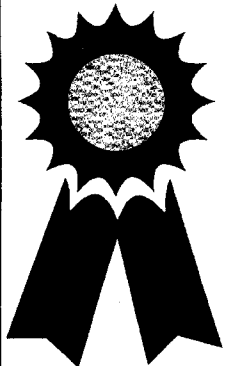
to certify that they have successfully completed to satisfaction

Assessment Scientist Training
(AS100)

Date: June 11 – 13, 2013


Terry Kraus, Co-Chair

Assessment Working Group



AGENDA

Day One

AS100 - Introduction to Assessment Science

Meeting Location: Tewksbury, MA

November 14, 2016

8:00 a.m. – 4:30 p.m.

| | |
|---|------------------------------|
| Welcome/Introduction | |
| Course Description/Objectives/Expectations | |
| Protective Action Guidance (PAG) Overview | |
| I. Dose Limits | |
| II. New Revision | |
| Assessment Manual Overview | |
| I. Volumes I & II | |
| II. Structure | |
| III. Using the Manuals | |
| Assessment Concepts | |
| I. Release Mechanisms | VII. Breathing Rate |
| II. Dose Pathways | VIII. Resuspension Parameter |
| III. Time Phases | IX. Integrated Air Activity |
| IV. Evaluation Time | X. Deposition Velocity |
| V. Avoidable Dose | XI. Data Products |
| VI. Weathering Parameter | |
| Turbo FRMAC Overview | |
| I. Functions of the Software | |
| II. Radionuclide Viewer | |
| III. Mixture Manager | |
| Public Protection (Part 1) | |
| I. What is Public Protection? | |
| II. How is Public Protection used? | |
| Public Protection (Part 2) | |
| I. How are Public Protection Values Calculated | |
| a. Dose Parameters | |
| b. Air & Deposition DRLs | |
| c. Dose and Exposure Rate DRLs | |
| d. Alpha and Beta DRLs | |
| e. Projected Public Dose | |
| II. Hand Calculations | |
| Public Protection (Part 3) | |
| I. Turbo FRMAC Calculations | |
| II. Comparison of Results | |
| III. Questions/Problems | |

AGENDA

Day Two

AS100 - Introduction to Assessment Science

Meeting Location: Tewksbury, MA

November 15, 2016

8:00 a.m. – 4:30 p.m.

| |
|--|
| Review/Discussions/Problems |
| Derived Intervention Levels (DILs) (Part 1) I. What are they? II. How are they used? |
| Derived Intervention Levels (Part 2) I. How are they calculated? II. Hand Calculation |
| Derived Intervention Levels (Part 3) I. Turbo FRMAC Calculations II. Comparison of Results III. Questions/Problems |
| Ingestion DRLs (Part 1) I. What are they? II. How are they used? |
| Ingestion DRLs (Part 2) I. Mature & Immature Crop DRLs II. Hand Calculations |
| Ingestion DRLs (Part 2) (Continued) I. Milk & Meat DRLs II. Hand Calculations |
| Ingestion DRLs (Part 3) I. Turbo FRMAC Calculations II. Comparison of Results III. Questions/Problems |
| Ingestion Dose (Part 1) I. What are they? II. How are they used? |
| Ingestion Dose (Part 2) I. How are they calculated? II. Hand Calculation |
| Ingestion Dose (Part 3) I. Turbo FRMAC Calculations II. Comparison of Results III. Questions/Problems |

AGENDA

Day Three

AS100 - Introduction to Assessment Science

Meeting Location: Tewksbury, MA

November 16, 2016

8:00 a.m. – 4:30 p.m.

| |
|--|
| Review/Discussions/Problems |
| Worker Protection Calculations (Part 1) I. What are they? II. How are they used? |
| Worker Protection Calculations (Part 2) I. How are they calculated? II. Hand Calculation |
| Worker Protection Calculations (Part 3) I. Turbo FRMAC Calculations II. Comparison of Results III. Questions/Problems |
| Assessing Nuclear Detonations (Part 1) I. What are they? II. How are they used? |
| Assessing Nuclear Detonations (Part 2) I. DRLs for Nuclear Fallout II. Calculating the Decay Power Function for Nuclear Fallout III. Nuclear Fallout Dose IV. Nuclear Fallout Stay Time |
| Assessing Nuclear Detonations (Part 3) I. Turbo FRMAC Calculations II. Comparison of Results III. Questions/Problems |
| Review |
| Test |
| Discussion/Questions |

CERTIFICATE *of* TRAINING

THIS ACKNOWLEDGES THAT

Elon Malkin

WAS TRAINED AND TESTED ON

**PACKAGING AND SHIPPING CLASS 7 (RADIOACTIVE)
MATERIAL [8 HOURS]**

Employer's Certification

This certifies that the employee named on this certificate has been trained and tested in accordance with the training requirements specified in 49 CFR 172.704.

Signature

This certificate is valid for 24 months for ICAO/IATA and for three years for the U.S. Department of Transportation.

Sean M. Austin

x

Sean M. Austin, CHP
Senior Health Physicist
August 3, 2017

Celebrating
30 years

PLEXUS
scientific

7130 Minstrel Way, Suite 215

Columbia, Maryland 21045

(443) 319-8055

From: Sean Austin <sean.austin@plexsci.com>
Sent: Tuesday, August 15, 2017 9:16 AM
To: Malkin, Elon
Cc: Sean Austin
Subject: RE: Packaging and Shipping Class 7 (Radioactive) Material Test

Elon,

I am glad you liked the course. You scored 100% on the test. Congratulations! I will have the certificate printed and mailed to you. I will use the following address unless you give me a different one to use.

Elon Malkin, Ph.D.
Chemist and ARSO
FDA ORA WEAC
109 Holton Street
Winchester, MA 01890

Feel free to contact me if I can help you out with your shipping or radiation safety program now or in the future.

If you would like to sign up to receive our e-newsletters, visit [Plexus' Nuclear Solutions Division webpage](#) (scroll to the bottom of the page).

Thank you.

Sean



Sean M. Austin, CHP
Senior Health Physicist
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Nuclear Solutions Division
7130 Minstrel Way
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PACKAGING AND SHIPPING CLASS 7 (RADIOACTIVE) MATERIAL WEBINAR

- Session 1 Introduction, Review of DOT Training Regulations and Materials
- Scope of DOT Regulations, NRC/State regulations, HAZMAT/Dangerous Goods Definitions, General Awareness and Familiarization Video
 - Choosing Proper Packaging for Class 7 (Radioactive) Material
 - General Shipping Requirements (Transport Index, Radiation Limits, Exclusive Use, Quality Control), Package Design Requirements and Authorizations (General design requirements, Type A)
 - Questions and Answers
- Session 2 HAZMAT and Dangerous Goods Tables, Hazard Communication (Marking and Labeling Packages, Shipping Papers, Placarding Vehicles, Emergency Response)
- Excepted Packages (Limited Quantities, Instrument and Articles, Empty Packages, UF₆, Multiple Hazard LQ)
 - Questions and Answers
- Session 3 LSA/SCO, Air and Ground Transport Requirements (Passenger Aircraft, Highway, Driver Training, Airbills), HAZMAT Security Awareness and Security Plans, Carrier Incident Reporting, Resources
- Questions and Answers
 - Exam available online the next day; Certificates mailed

CERTIFICATE OF ACHIEVEMENT

This is to Certify that

ELON M. MALKIN

Has Completed 8 Hours of

Training in U.S. DOT and IATA Regulations for Packaging, Labeling, Marking, Manifesting and Shipping the following Class 7 (Radioactive) Material: Exempt Quantities; Excepted Packages (Limited Quantity, Instruments and Articles); Radioactive White I, Yellow II and Yellow III.

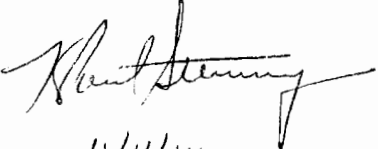
November 4, 2014



K. Paul Steinmeyer, RRFT
Radiation Safety Associates, Inc.
19 Pendleton Dr., PO Box 107
Hebron, CT 06248
860-228-0487

Name ELON M. MALKIN

Instructor: K. Paul Steinmeyer, RRPT Grade 100%


11/4/14

FINAL EXAM

DOT/IATA MAIN COURSE PACKAGING, LABELING, DOCUMENTATION

November 4, 2014

K. Paul Steinmeyer, RRPT
Radiation Safety Associates, Inc.
19 Pendleton Drive/PO Box 107
Hebron, CT 06248
860-228-0487
kpstein@radpro.com

These questions apply to the DOT and IATA regulations, **NOT** to your in-house procedures. Your procedures may be MORE CONSERVATIVE than the regulations.

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Appendices

- A** 49 CFR 173.403 Definitions (Abbreviated version)
- B** 49 CFR 173.435 Table of A₁ and A₂ Values for Radionuclides (Abbreviated version)
- C** 49 CFR 173.436 Exempt Material Activity Concentrations and Exempt Consignment Activity Limits for Radionuclides (Abbreviated version)
- D** 49 CFR 172.101 Table of Hazardous Materials
- E** 49 CFR 172 Subpart H—Training
- F** 49 CFR 178 Specifications for Packages (Type A Containers)
- G** The Container Book
- H** Miscellaneous
 - Shipping the Fluke 451P Pressurized Ion Chamber
 - Relative Response Curves for Various Instruments

Memorandum

To: ORA All Employees
From: Paul E. Norris, DVM, MPA Paul E. Norris -S
Date: July 2, 2018
Subject: Delegation of Authority for Radiation Safety Officer

Elon Malkin, Ph.D. has been appointed Radiation Safety Officer and is responsible for ensuring the safe use of radioactive source material, radioactive special material, and radioactive byproduct material. The Radiation Safety Officer is responsible for managing the radiation safety program; identifying radiation safety problems; initiating, recommending, or providing corrective actions; verifying implementation of corrective actions; and ensuring compliance with regulations for the use of radioactive source material, radioactive special material, and radioactive byproduct material. The Radiation Safety Officer is hereby delegated the authority necessary to meet these responsibilities.

The Radiation Safety Officer has the authority to immediately stop any operations involving the use of radioactive source material, radioactive special material, or radioactive byproduct material in which health and safety may be compromised or may result in non-compliance with Nuclear Regulatory Commission requirements.

Changes to Radiation Safety Committee and WEAC Organizational Structure

On May 15, 2017, as part of the broader agency Program Alignment initiative, the U.S. Food and Drug Administration's (FDA) Office of Regulatory Affairs (ORA) implemented a program-based management structure that aligns staff by FDA-regulated product. WEAC has been assigned to the Office of Regulatory Science's (ORS) Office of Medical Products, Tobacco & Specialty Laboratory Operations. During realignment, ORS's Office of Business and Safety (OBSO) also created a new Health Physics (HP) position. ORA intends that the HP serves as the ORA and WEAC Radiation Safety Officer (RSO).

Consequently, three positions in WEAC's Radiation Safety Committee (RSC) have different reporting structures. WEAC's Industrial Hygienist and the OBSO HP (the proposed Radiation Safety Officer) report to a supervisor in the Office of Business and Safety (OBSO). WEAC's administrative branch director has been reassigned to the Office of Management (OM) as a WEAC Supervisory Administrative Management Specialist. All affected individuals would still work at 109 Holton Street in Winchester, MA at the WEAC facility. See below figure 1 below for organizational chart.

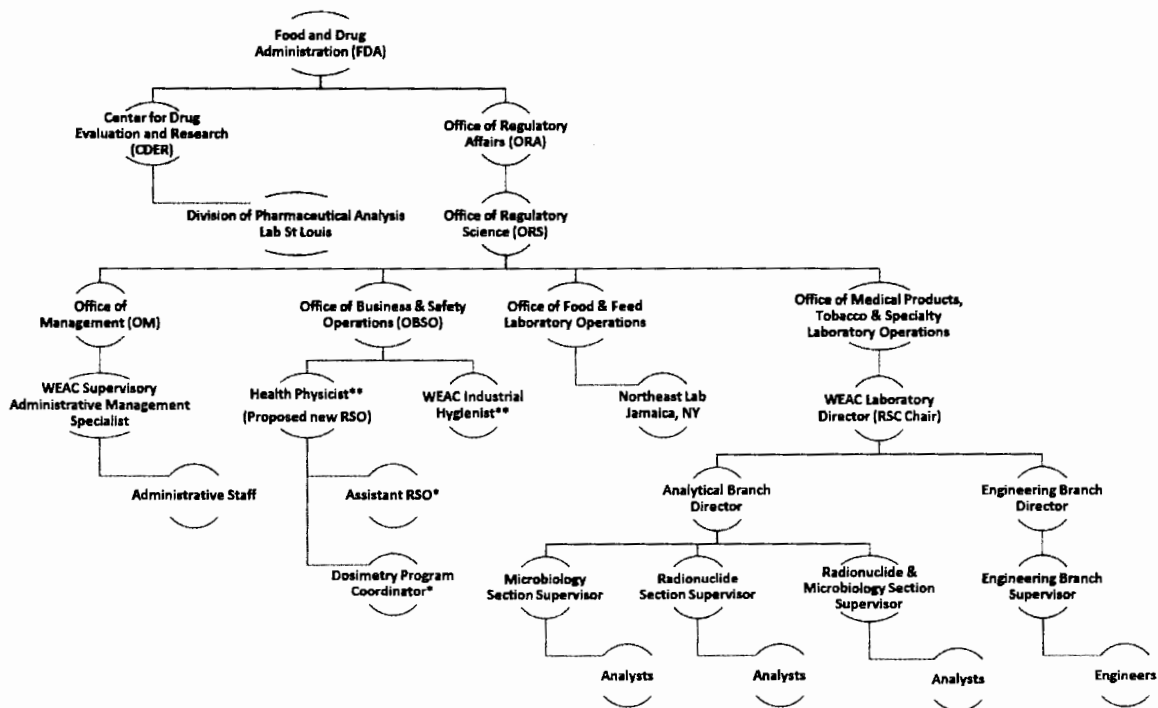


Figure 1: FDA ORA's Organizational Structure. Collateral duties marked (*) do not report directly to RSO and may be occupied by members of WEAC or OBSO. Red font indicates membership to Radiation Safety Committee. **Although OBSO HP (proposed new RSO) and IH fall under OBSO, both are physically stationed at WEAC and remain in a direct advisory role to the WEAC Lab Director. The chart also includes the organizational framework of the licensed locations of CDER DPA in St Louis and the Northeast Lab in Jamaica, NY.

Functionally, WEAC's Radiation Safety Committee (RSC) will operate the same way, but will have members that report to different ORS offices. The HP and IH have remained in a direct advisory role to

the WEAC Lab Director; however, the HP and IH will no longer be supervised the RSC chair. This structure would provide more objectivity to RSO and IH oversight.

The RSC is still chaired by the WEAC Laboratory Director. Members of the radiation safety committee still include WEAC's local figures of authority (WEAC branch directors and direct supervisors of users of radioactive material), safety professionals (now working for OBSO), as well as several WEAC Analysts and Engineers that represent all branches of the WEAC facility. The Radiation Safety Committee still consists of an equal number of Bargaining Unit Employees (BUE) and Non-Bargaining Unit Employees (NBUE). See Figure 2 below.

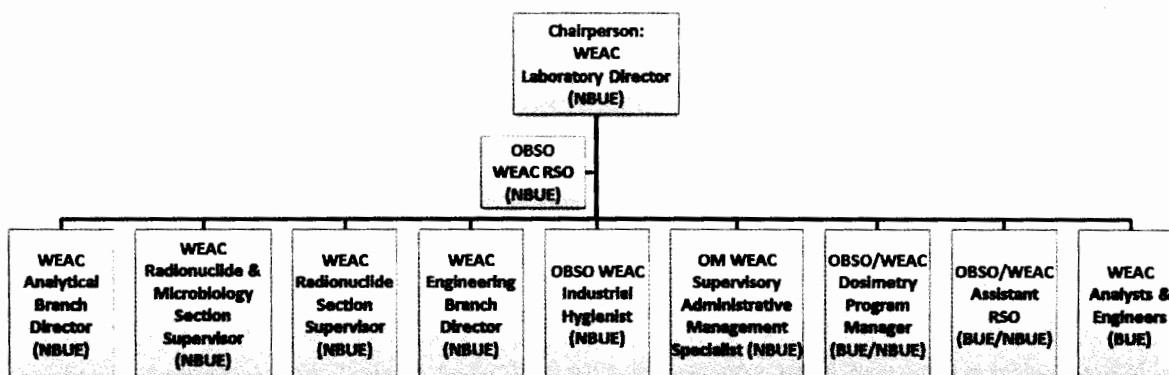


Figure 2: WEAC's Radiation Safety Committee. Red font designates Office membership (WEAC = Office of Medical Products, Tobacco & Specialty Laboratory Operations Winchester Engineering and Analytical Center).



ACKNOWLEDGEMENT - RECEIPT OF CORRESPONDENCE

| | |
|--|--|
| Name and Address of Applicant and/or Licensee Department of Health and Human Services ATTN: Brian L. Baker, Center Director 109 Holton Street Public Health Service, FDA Winchester, MA 01890-1197 | Date July 12, 2018 |
| | License Number(s) 20-08361-01 |
| | Mail Control Number(s) 609339 |
| | Licensing and/or Technical Reviewer or Branch Commercial, Industrial, R&D, & Academic Branch |
| | (Empty field) |

This is to acknowledge receipt of your: Letter and/or Application Dated: 07/03/2018

The initial processing, which included an administrative review, has been performed.
 Amendment Termination New License Renewal

There were no administrative omissions identified during our initial review.

This is to acknowledge receipt of your application for renewal of the material(s) license identified above. Your application is deemed timely filed, and accordingly, the license will not expire until final action has been taken by this office.

Your application for a new NRC license did not include your taxpayer identification number. Please complete and submit NRC Form 531, Request for Taxpayer Identification Number, located at the following link: <http://www.nrc.gov/reading-rm/doc-collections/forms/nrc531.pdf>
 Follow the instructions on the form for submission.

The following administrative omissions have been identified:
 [Empty box for listing omissions]

Your application has been assigned the above listed MAIL CONTROL NUMBER. When calling to inquire about this action, please refer to this control number. Your application has been forwarded to a technical reviewer. Please note that the technical review, which is normally completed within 180 days for a renewal application (90 days for all other requests), may identify additional omissions or require additional information. If you have any questions concerning the processing of your application, our contact information is listed below:

Region I
U. S. Nuclear Regulatory Commission
Division of Nuclear Materials Safety
2100 Renaissance Boulevard, Suite 100
King of Prussia, PA 19406-2713
(610) 337-5260, (610) 337-5313,
(610) 337-5398, or (610) 337-5239