



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

(FSME-11-025, March, Training, H-315)

March 18, 2011

ALL AGREEMENT STATES, MICHIGAN

ACCEPTANCE TO THE IRRADIATOR TECHNOLOGY COURSE (H-315) **(FSME-11-025)**

**PURPOSE:** To provide the list of students selected for the Irradiator Technology Course (H-315).

**BACKGROUND:** The U.S. Nuclear Regulatory Commission (NRC) provides the list of students and instructions to the States to help ensure that States with candidates on waiting lists will have an opportunity to fill vacated slots that may open up after this notification letter has been sent.

**DISCUSSION:** Enclosure 1 is the list of students from the Agreement States selected to attend the May 16-20, 2011, Irradiator Technology Course (H-315). Please provide the list of students and the instructions (Enclosure 2) to each individual from your program that is on the list. Enclosed for your information is a tentative schedule for the course (Enclosure 3). The NRC will pay lodging expenses and per diem to students attending this course. Students should make their travel arrangements through Carlson Wagonlit Travel at 1-866-250-2160, and submit their travel information to NRC to issue their travel authorization. Please go to the following website to download the Travel Application Form <http://nrc-stp.ornl.gov/training.html> and then send it to [Brenda.Usilton@nrc.gov](mailto:Brenda.Usilton@nrc.gov) or fax it to 301-415-3502.

We ask that you inform us of any cancellations 30 days prior to the course starting date or as soon as you are aware that the student cannot attend the course.\*

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\* This information request has been approved by OMB 3150-0029 expiration 11/30/2013. The estimated burden per response to comply with this voluntary collection is approximately 8 hours. Send comments regarding the burden estimate to the Records and FOIA/Privacy Services Branch (T-5F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to [infocollects@nrc.gov](mailto:infocollects@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0029), 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.

If you have any questions regarding this correspondence, please contact me at 301-415-3340, or the individual named below

POINT OF CONTACT: Brenda G. Usilton  
TELEPHONE: (301)415-2348

INTERNET: [Brenda.Usilton@NRC.GOV](mailto:Brenda.Usilton@NRC.GOV)  
FAX: (301)415-3502

***/RA/ by Terrence Reis***

Robert J. Lewis, Director  
Division of Materials Safety  
and State Agreements  
Office of Federal and State Materials  
and Environmental Management Programs

Enclosures:

1. Course Participant List
2. Instructions to Students
3. Tentative Course Schedule

IRRADIATOR TECHNOLOGY COURSE (H-315)  
May 16-20, 2011  
LAVAL, CANADA

STATE	STUDENT(S)
NORTH CAROLINA Department of Environment & Natural Resources 3825 Barrett Drive Raleigh, NC 27609-7221	Paul Higgins

## INSTRUCTIONS TO STUDENTS

**ACCEPTANCE:** This is to advise you that those individuals in Enclosure 1 have been accepted for participation in the Irradiator Technology Training Course (H-31 5). This course will be presented by MDS Nordion on May 16-20, 2011, at the Canadian Irradiation Centre (CIC), 535 Boulevard Cartier, Laval, Quebec, Canada, H7V 3S8, Contact: Mr. Yves Doyle, MDS Nordion, work - 450-687-5165, cell phone – 613-697-9837. Maps of the area can be found at [www.cic.nordion.com](http://www.cic.nordion.com).

**COURSE:** This course will begin on May 16, 2011, at 9:00 a.m. and end at 5:00 p.m. each day except for Friday, May 20, 2011. Friday's class is scheduled to end between 1:30-2:30 p.m.

**LODGING & TRAVEL:** You should plan to arrive on Sunday, May 15, 2011, and depart on Friday, May 20, 2011. Travelers will need a passport to enter into Canada. Participants must make their own lodging and travel arrangements. Individuals should request a government rate at the hotels. Below are a number of hotels in the area. If traveling by air, you need to contact Carlson Travel at 1-866-250-2160 for airline reservations. The per diem for the area is \$228 for lodging, \$117 for meals and incidents, not to exceed \$348 per day. No rental cars will be issued. Please complete the Travel Application Form which is located at <http://nrc-stp.ornl.gov/training.html>. You can also go to the same website to receive a copy of the travel instructions and voucher for reimbursement. Please return the travel form to Brenda Usilton by email or fax (301) 415-3502. If you have any questions regarding the form contact Brenda Usilton at [Brenda.Usilton@nrc.gov](mailto:Brenda.Usilton@nrc.gov) or 301-415-2348. Cellular phones and similar devices with audible capability should be disabled while classes are in session. Normal office/business attire is appropriate for students attending training. Individuals should make a reservation at one of the following hotels. The cost of a taxi from the airport is around \$35.00-\$50.00 Canada. It takes approximately 30 minutes to travel from the CIC to Dorval Airport.

Room reservations can be made at the Sheraton Laval Hotel, 2440, Autoroute des Laurentides, Laval, Tel. 800-667-2440 or 450-687-2440. This hotel offers a special rate for MDS Nordion's guests: \$129.00 + 15% taxes CNS night. This is normally the preferred place to stay and overall best value. The hotel is located across from a shopping mall. Please make sure to ask for the MDS Nordion special rate when you call. Other local hotels are:

Hilton Laval\*\*\*\*  
2225, Autoroute des Laurentides  
Laval  
Tel. 800-363-7948  
[www.hilton-laval.com](http://www.hilton-laval.com)

Radisson Hotel Laval\*\*\*\*  
2900 boul. Le Carrefour  
Laval  
Tel. 800-333-3333  
[www.radisson.com/laval.ca](http://www.radisson.com/laval.ca)

Comfort Inn\*\*\*  
2055 Autoroute des Laurentides  
Laval  
Tel. 800-267-3837  
[www.choicehotels.ca/cn331](http://www.choicehotels.ca/cn331)

## Irradiator Technology Course Schedule

### DAY 1

**Session 1**  
9:00-10:15

**Introduction**  
-Welcome  
-Preliminary tour of IR-147

10:15-10:30

COFFEE BREAK

**Session 2**  
10:30-11:30

**Industrial Irradiators**  
-Types  
-Components  
-Design principles  
-Touchtime  
-PLC

**Session 3**  
11:30-12:00

**Research Irradiators**  
-Types  
-Design

12:00-1:00

LUNCH

**Session 3**  
1:00-1:30

**Research Irradiators (continued)**  
-Use  
-Inspections (hands-on)

**Session 4**  
1:30-2:30

**Cobalt-60**  
-Cobalt-59  
-Product of Co-60  
-Transportation of Co-60  
-Handling of Co-60

**Session 5**  
2:30-3:15

**Source Loading**  
-What every operator should know  
-Handling tools  
-Typical loading  
-Source loading procedure

3:15-3:30

COFFEE BREAK

**Session 6**  
3:30-5:00

**Operation of Industrial Irradiators (Hands-on)**  
-Operating modes  
-Sequence diagram  
-PLC

### DAY 2

**Session 7**  
9:00 - 10:00

**Safety Systems & Features**  
-Fault indicators  
COFFEE BREAK

10:00-10:15

**Safety Systems & Features (continued)**  
-Caution indicators

10:15-11:00

-Safety features  
-Hands-on review of safety systems

**Session 8**  
11:00-12:00

**Walk-through Inspection (hands-on)**  
-A complete safety inspection is performed

12:00-1:00

LUNCH

1:00-2:00

Walk-through Inspection (hands-on) (continued)  
-A complete safety inspection is performed

<b>Session 9</b> 2:00-3:15	<b>Irradiator Maintenance</b> <ul style="list-style-type: none"><li>-Control room organization</li><li>-Equipment maintenance</li><li>-Electrical/Mechanical</li><li>-Safety checks</li></ul>
3:15-3:30	COFFEE BREAK
<b>Session 10</b> 3:30-5:00	<b>Good Manufacturing Practices</b> <ul style="list-style-type: none"><li>-Standard Operating Procedures</li><li>-Following product from receiving to shipping</li></ul>
<b>DAY 3</b> 8:00	Leave Laval for Kanata
<b>Session 11</b> All day	<b>Tour of a cobalt-60 product facility</b> <ul style="list-style-type: none"><li>Storage pool</li><li>-Hot cells</li><li>-Encapsulation</li><li>-Leak testing</li><li>-F-168 container</li><li>-Transportation</li></ul>
12:00-1:30	LUNCH
<b>Session 12</b> 1:30-3:00	<b>Tour of a Molybdenum 90 Product Facility</b> <ul style="list-style-type: none"><li>-Guided tour of the MDS Nordion Molybdenum 90 product facility</li></ul>
3:00-6:00	-Return to Laval
<b>DAY 4</b>	
<b>Session 13</b> 9:00-10:00	<b>Emergency Procedures</b> <ul style="list-style-type: none"><li>-Procedures as required by 10 CFR36</li></ul>
10:00-10:15	COFFEE BREAK
<b>Session 14</b> 10:15-10:45	<b>Wipe test (Hands-on)</b> <ul style="list-style-type: none"><li>-A source rack wipe test is performed</li></ul>
<b>Session 15</b> 10:45-11:15	<b>Radiation Safety Officer and Operator responsibilities</b> <ul style="list-style-type: none"><li>-Maintenance records</li><li>-Irradiation log book</li><li>-Visitor records</li></ul>
<b>Session 16</b> 11:15-12:15	<b>Radiation Survey (hands-on)</b> <ul style="list-style-type: none"><li>-A radiation survey of biological shield is performed</li></ul>
12:15-1:15	LUNCH
<b>Session 17</b> 1:15-2:00	<b>Incidents</b> <ul style="list-style-type: none"><li>-Incidents at irradiation facilities</li></ul>
<b>Session 18</b> 2:00-3:15	<b>Dosimetry (hands-on)</b> <ul style="list-style-type: none"><li>-Types of dosimeters</li><li>-Characteristics</li><li>-Reading equipment</li></ul>
3:15-3:30	COFFEE BREAK
<b>Session 19</b> 3:30-5:00	<b>Regulations</b> <ul style="list-style-type: none"><li>-USNRC regulations 10 CFR36</li></ul>

**DAY 5**

**Session 19**

8:15-9:15

**Regulations (continued)**

- Regulatory Guide 8-13
- Regulatory Guide 8-29
- IAEA guidelines
- ANSI standards

**Session 20**

9:15-9:45

**Licensing**

- USNRC Guide NUREG 1556 Vol. 6
- Security Update

9:45-10:00

COFFEE BREAK

**Session 21**

10:00-11:15

**Audit**

- Audit of radiation safety procedures, operational procedures and safety systems

**Session 22**

11:15-11:30

**Review**

- Discussion

**Session 23**

11:30-1:30

**Examination**

- Written test

Note:

All hands-on exercises are carried out using a full scale commercial irradiator and two research irradiators.

Dosimetry exercises are possible in our dosimetry laboratory which currently handles 7 (seven) of the most used dosimetry systems in the world.