Lawrence Berkeley National Laboratory

Attach this completed form to the relevant WPC activities where this OJT is required. To learn how, see the instructional video "How to use the OJT Tool in Activity Manager (Video)" at the OJT Website (https://training.lbl.gov/OJT/).

This OJT is for qualifying workers to use RF/MW-generating devices. ***Note:*** *See back page for the meanings of these column-headings*

Preparation Steps (setup)	Student Explains	Student Demos	Critical Step	Risk Important Action	Common Error	Instructor
1. Trainee understands the hazards of the RF/MW radiation and the controls used in their operations to work safely: - Exposure to MW radiation can heat the tissue at levels above power density of 10 mW/cm^2. - People with metallic implants (e.g., cardiac pacemakers, cochlear implants, defibrillators, drug delivery systems, and other medical devices) may experience the device's malfunctioning if subjected to strong RF fields. - To eliminate the risk of exposure to RF, engineering and administrative controls must be implemented wherever possible.	x					
2. Trainee is familiar with the manufacturer's manuals and understands specific safety-related information.	x					
3. Trainee can correctly use applicable engineering controls: - Careful ***configuration of equipment*** at a site, installing physical barriers (e.g., locked doors, Faraday cages, fences, walls) ***Shielding*** - ***Grounding*** - ***Remote operation*** - ***Interlocks*** - **-** Devices that can cause acute thermal injuries (e.g., industrial microwave ovens) should have interlocked doors. Interlocks must not be tampered with. - ***Waveguides***		x				
4. Trainee selects and uses applicable PPE: - Protective equipment provided by the manufacturer (e.g., shields/ enclosures). - PPE - e.g., everyday footwear and socks (thick leather shoes with rubber soles and wool socks), RF-protective suits.		x				
5. Trainee posts appropriate warning signs.		x				
6. Trainee restrict access to authorized personnel.		x				

7. Trainee can identify the symptoms of RF/MW exposure: - Heating of body tissues (thermal effects): pain, reddening of the skin, unusually elevated body temperature, and other evidence of tissue burning. - Contact shocks and RF burns at low frequencies (30 kHz–100 MHz). - Effect on people with metallic implants.	x					
Performing the task or Activity						
1. Trainee can safely use the RF/MW-generating device		x				
2. Trainee is using techniques for minimizing UV exposure such as: - ***Monitoring the duration of RF radiation exposure***. Exposure times should be kept as short as reasonably possible and should not exceed the TLVs in the applicable averaging times. - ***Contact with external surfaces*** of radiating devices should be minimized. - Exposure can be controlled by ***varying the distance from the source***. For example, devices should be placed in locations that are least likely to be encountered by common foot traffic.		x				
Clean up (what is done after performing the task)						
1. Trainee turns off the device.		x				
2. Trainee stores all PPE appropriately.		x				
Emergency Response						
1. Trainee understands what to do if something unexpected occurs, such as an off-normal event, overexposure, or other emergency: - Turn Off the device - Remove the worker from the exposure area to a cool environment and provide cool drinking water. - Apply cold water or ice to burned areas. - Seek immediate medical attention. Severe MW or RF overexposure may damage internal tissues without apparent skin injury. - Notify your supervisor at first opportunity, no matter how minor the injury may seem.	x					
Instructor Notes						

This form helps you document the contents of your OJT sessions. From within WPC, you can attach the completed form to the relevant Activity, or place it in a network drive and link to it from the Activity. See: https://training.lbl.gov/OJT/

Instructions

Add or delete rows and/or categories as need. Add the steps needed to perform the task/activity.

The template is arranged in blocks. Use the blocks that are helpful to you and delete blocks that don't apply. You can also add rows and blocks as-needed. Likewise, use the columns that apply to your OJT and ignore the ones that don't.

Steps
List the steps the student must be able to perform to execute this task correctly. Use the columns to indicate your expectations for the student, and to remind yourself if a step cannot be easily undone ("critical step"), if this is a step necessary for reducing risk in a later step ("risk-important action") or if students frequently make a common error.

Other things you should consider noting in this column include:

- Why (e.g., "Why is this step necessary?") and What-If (e.g., "What if I forget to do this step or do it wrong? What could happen?") questions related to this step

Student Explains
Check this column if the student must ***explain*** something (e.g., how to respond to a particular emergency or off-normal condition).

Student Demos
Check this column if the student must ***demonstrate*** something (e.g., how to put on proper PPE). In general, it's preferable to have the student demonstrate rather than just explain.

Critical Step
Mark this column if this is a ***critical step***, meaning, it's a step that can't be easily undone. (e.g., once you combine two chemicals in the same beaker, you can't easily "uncombine" them). You and the student should both verify that everything is as it should be before executing a critical step.

Risk Important Action
Mark this column if this is a ***risk important action***. For example, putting on your seatbelt is a risk-important action because it mitigates the harm you could experience if your car is involved in a crash. By itself, it makes no difference, but in an emergency, it can make a very big difference. In laboratory terms, this could be analogous to keeping a spill kit nearby in case there's a chemical spill, or ensuring you have calcium gluconate gel nearby if you are working with hydrofluoric acid.

Common Error
Check this column if there are known, common mistakes that people make. If this row is documenting such a step, identify those common errors for the student, clarify why so many people make them, and ensure that the student knows to avoid them.

Instructor
Some OJT is taught by multiple instructors, each taking responsibility for a different portion of the session. If that is the case for your OJT, use this column to mark (with the instructor's name) which instructor teaches which steps. If your OJT has only one instructor, you can just put the instructor's name in this column in the first row and leave the rest of the column blank.