ENVIRONMENTAL HEALTH & SAFETY
UNIVERSITY of WASHINGTON

RADIOFREQUENCY (RF) SAFETY EXPOSURE CATEGORIZATION

<table>
<tr><th>Exposure conditions</th><th>Control measures</th><th>Signage</th></tr>
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<td>

Operational of the source(s) or locations where RF fields are too weak to cause exposures greater than General Public limit.

<table>
<tr><td>Cat.</td><td>Occupational Worker</td><td>General Public</td></tr>
<tr><td>1</td><td><20%</td><td><100%</td></tr>
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Green zone is where the time and spatial-average is below 20% of Occupational Worker limit or below 100% of General Public limit.

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RF Safety Guideline/NIER report must be submitted to RFSO for approval.
No special EME safety practices required in these areas.
No signage required except for Information sign or antennas owner and registration site information.

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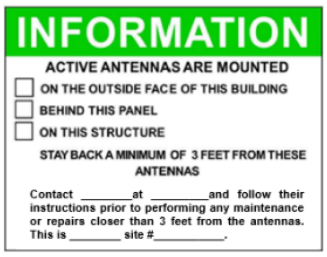
<td>
INFORMATION sign at rooftop/access door.


The antenna owner information and Antenna Structure Registration Number displayed on the sign.
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Operational of the source(s) or locations where RF exposure could cause exposure greater than General Public limit but not the Occupational Worker limit to be exceeded in accessible areas.

<table>
<tr><td>Cat.</td><td>Occupational Worker</td><td>General Public</td></tr>
<tr><td>2</td><td>≥20% but <100%</td><td>>100%</td></tr>
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Blue zone is where the spatial average is between 20%-100% of Occupational Worker limit. This limit MUST be less than 100% the Occupational limit.

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RF Safety Guideline/NIER report must be submitted to RFSO for approval.
Recommended RF safety awareness training for all workers in this area.
Controlled areas with barriers and/or signage required in these areas.
Do not walk in front of the antenna face; no loitering in this controlled area.
Individual MUST have full control over any area where the exposure levels exceed the limit.

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NOTICE signage shall be posted on the barriers/stanchion to prevent anyone from entering into the area (must be cordon off around the antennas - 4 posts /3 signs).


Or must be posted in location that can be easily viewed by individuals that enter the areas of concerns.
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Operational of the source(s) or locations where RF exposure exceeded the Occupational Worker limit in accessible areas.

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RF Safety Guideline/NIER report must be submitted to RFSO for approval.
Individual <u>shall not</u> enter and work in these areas without RS approval.

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<td>
CAUTION signage shall be posted on the barriers/stanchion to prevent anyone from entering into the area (must be cordon off around the antennas - 4 posts /3 signs).
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<tr><td>Cat.</td><td>Occupational Worker</td><td>General Public</td></tr>
<tr><td>3</td><td>≥100%</td><td>≥500%</td></tr>
</table>
Yellow zone is where the spatial average is above 100% of Occupational Worker limit.
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Required RF safety training and access area is restricted only for trained worker.
Controlled areas with barriers and signage required in these areas.
Do not walk in front of the antenna face.
Requires reduction of RF power and approval from Radiation Safety prior any work on the antennas.

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Or must be posted in location that can be easily viewed by individuals that enter the areas of concerns.
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Exposure will exceed exposure limit in accessible areas.
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<tr><td>Cat.</td><td>Occupational Worker</td><td>General Public</td></tr>
<tr><td>4</td><td>>500%</td><td>>1000%</td></tr>
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Red zone is where the time and spatial-averaged levels fall above 500% of Occupational Worker limit or is not feasible to prevent exposures.
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RF Safety Guideline/NIER report must be submitted to RFSO for approval.
MUST re-engineer site to reduce the EME fields.
<u>No access allowed-Prohibited access!</u> There must be controls to detect any unauthorized entry and terminate the RF energy in the area.
Lockout/tagout of transmitters during the maintenance of the antenna system.
PPE alone does not provide adequate protection.
Special RF training and PPE are required. (Applies only to individuals trained by RS).

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RF WARNING & Pacemaker DANGER signage or appropriate DANGER sign shall be posted very near RF sources.


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EME – electromagnetic energy
General Public Limit – limit of radiofrequency energy exposure set by the Federal Communications Commission (FCC)
NIER - Non-Ionizing Electromagnetic Radiation
Occupational Worker Limit - Limit of radiofrequency energy exposure set by the Federal Communications Commission (FCC)
PPE – personal protective equipment
RF fields – RF fields make up the electromagnetic wave, which is the radio signal.
RF energy - radio waves emitted by transmitting antennas are collectively referred to as "radiofrequency" or "RF" energy.
RFSO – Radiofrequency Safety Officer
RS – Radiation Safety, an Environmental Health & Safety program

Visit the Environmental Health & Safety (EH&S) website for more information.

Contact Radiation Safety at radsaf@uw.edu or (206) 543-0463 with questions.