Prepared for
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METRICOM

HEALTH AND SAFETY PROGRAM FOR EXPOSURE TO RADIO FREQUENCY RADIATION

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SECTION I.

I. INTRODUCTION AND PURPOSE OF THE PROGRAM

As directed by the 1996 Telecommunications Act, the Federal Communications Commission (FCC) has revised guidelines for human exposure to RFR (Radio Frequency Radiation). The FCC adopted as their standard a combination of the ANSI/IEEE C95.1-1992 and NCRP 1986 standards. This FCC standard is both preventative and precautionary in nature and applies to both "Controlled/Occupational" and "Uncontrolled/General Population" exposures of individuals- as defined in the FCC's OET Bulletin No. 65.

This safety program addresses the tower and rooftop antenna cell sites of METRICOM. The guidelines incorporated into the safety program will assist METRICOM employees, technicians, contractors, and consultants working in a "Controlled/Occupational" environment and the public in a "Uncontrolled/General Population environment in complying with RFR maximum permissible exposure (MPE) standards.

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SECTION II.

II. SAFETY POLICY

In order to minimize the risk of overexposure to any individuals, it is the policy of METRICOM to:

1. Identify and control by engineering design, protective equipment, or administrative actions, hazardous RFR and other dangers associated with each antenna tower and/or roof-top antenna site and accompanying electronic equipment. This policy shall be adhered to during all phases of equipment design, acquisition, installation, operation, and maintenance.

2. Limit METRICOM and their customers' employees, technicians, contractors and consultants exposure to RFR levels that are within the applicable MPE limits.

3. Assume maximum RFR exposure to individuals from all RF sources may exceed the MPE limits, and control exposure appropriately.

4. Ensure that individuals are aware of potential RFR at the METRICOM antenna tower sites and/or rooftop antenna sites and the control measures implemented to limit their exposure to RFR. Only authorized personnel are allowed entrance to the tower sites or rooftop sites.

5. Investigate and document all alleged RFR overexposure incidents.

6. Mandate that all employees, technicians, contractors, and consultants performing work or that enter the antenna tower sites and/or antenna roof-top sites for METRICOM or customers of METRICOM be required to sign a form prior to or upon entering the controlled area stating that:

   a. They have received and understand RFR awareness training.

   b. They understand how the RFR personal monitor works and why they are required to wear it.

   c. They are aware of the potential effects on medical implants and those individuals implanted with such devices enter the restricted area at their own risk.

7. Mandate that all employees, technicians, contractors, and consultants accessing the antenna tower sites and/or antenna roof-top sites for METRICOM or customers of METRICOM will:

a. Report any encountered RFR effects to METRICOM.

b. Test the RFR personal monitor according to manufacturer's test procedures before and after usage to verify the RFR personal monitor was operating properly throughout the period that it was worn.

c. Use the RFR personal monitor and employ the monitor with switch in "On" position during the period that they are in the controlled area.

8. The provisions of this program must be followed by METRICOM and their customers' employees, technicians, contractors, and consultants when working on METRICOM facilities. These procedures were written with the assumption that METRICOM and their customers' employees, technicians, contractors, and consultants will be in a "Controlled/Occupational" environment as they will have the ability to control their exposures based on the health and safety program implemented by METRICOM. This ability will come from RFR health and safety training, posted signs, and administrative and/or engineering controls. Any technical or procedural questions about the policy or program should be directed to the METRICOM safety officer. In the event that any portion of this policy or program conflicts with state or federal regulations, standards, or guidelines pertaining to employees, technicians, contractors, consultants, or general public exposure to RFR, the federal regulations will apply over those described in this document.

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SECTION III.

III. SAFETY OFFICER'S RESPONSIBILITIES

1. METRICOM will designate a safety officer responsible for RFR exposure protection policies. The safety officer shall establish and maintain the RFR protection program that must be followed when any METRICOM or their customers' employees, technicians, or contractors are conducting operations involving actual or potential exposure to RFR. The safety officer shall also ensure that all personnel follow the specified procedures such that exposure to METRICOM or their customers' employees, technicians, or contractors does not exceed the applicable MPE as a result of RFR.

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SECTION IV.

IV. The RFR Health and Safety Program consists of the following elements:

1. <u>Utilization of installed RF transmitters, which meet applicable RF and safety standards during the time of use, including after any modifications:</u>

a. Certification will be required on all future installations or modifications for RF amplified equipment at METRICOM antenna tower sites or antenna rooftop sites. This will ensure that the equipment installed in the transmitter room meets the new FCC MPE standard.

b. Any service, modification, or action that has been performed on equipment that is currently installed, which is responsible for amplifying or coupling amplified RF signals, will be checked with RF survey equipment immediately after service and before returning that item or system to operational status. The RFR personal monitor may be used for this purpose. Records of the RFR check must be prepared and forwarded to the safety officer within three (3) days of leaving the site. The record will be maintained by the safety officer. No new or modified equipment will be allowed to operate at METRICOM facilities without the above certification.

2. <u>RFR hazard identification and periodic surveillance:</u>

RFR hazard identification has been assessed by means of calculating theoretical exposure potential from typical antennas. METRICOM will also conduct a thorough modeling analysis and/or on-site survey at several representative antenna tower sites and/or antenna rooftop sites. Sites will also be evaluated for conducting objects to ensure they do not constitute RF shock and burn hazards. Periodic surveillance will be conducted by a competent person who has been trained to perform surveys of new or existing installations in order to assess changes in exposure potential.

3. Implementation of controls to insure RF exposure levels are in compliance with applicable guidelines:

a. ADMINISTRATIVE CONTROLS

1. Appropriate controls will be implemented in all areas where the "Uncontrolled/General Population" limits may be exceeded. These controls will consist of restricting access and placing signs to alert those potentially affected by the anticipated RF levels.

2. Although field limits are specified as both "whole-body and time averaged," it is the policy of METRICOM to control all occurrences of RFR above the "Uncontrolled/General Population" levels. METRICOM presumes all antennas at each site have the potential to exceed MPE levels. Signs will be placed as follows to ensure compliance:

b. SIGNS

1. The placement of signs will be determined by calculating "Controlled/Occupational and "Uncontrolled/General Population" exposure limit distances utilizing measures such as Maximum Permissible Exposure (MPE) evaluations, site modeling, or RF Site Surveys.

2. Signs should be placed at the climbing access point for antenna communication towers with the following information:

i. Contact telephone number
ii. Site identification number

3. Signs should be placed near or attached to the transmitting antennas located on a rooftop with the following information:

i. Contact telephone number
ii. Site identification number
iii. Limited exposure distance from antenna

4. *SITE GUIDELINES*:

i. The site shall have signs posted which indicate a safety plan is in place for the site and provide guidelines regarding general RF safety awareness.

5. *NOTICE:*

   i. Signs shall be posted which provide a notice indicating radio frequency transmitting devices are in operation in the area.

   ii. The limits associated with this notification must be less than the "Controlled/Occupational" maximum permissible exposure (MPE) standard.

   iii. The notice shall distinguish the boundary between "Controlled/Occupational" and the "Uncontrolled/General Population" areas.

   iv. The boundary will usually be the fence for the property, gate entrance, or rooftop to the equipment room.

6. *CAUTION*:

   i. The caution sign identifies RF controlled areas where RF exposure can exceed the "Controlled/Occupational" maximum permissible exposure (MPE) standard.

   ii. The site will have signs posted at critical locations where RF levels may exceed "Controlled/Occupational" limits.

   iii. All authorized workers for RF controlled areas must have RFR awareness training.

7. *WARNING*:

   i. The warning sign denotes the boundary of areas with RF levels above the FCC limit for "Controlled/Occupational" maximum permissible exposure (MPE) standard.

   ii. Employees, technicians, contractors, or consultants should not enter these areas unless special procedures are followed.

8. Signs will be conspicuously mounted and placed at the normal site access points, e.g. antenna tower site access gate, and will include the RFR symbol which consists of a triangle with an RF radiation source depicted graphically in the center of the triangle.

9. Signs will be placed to alert and inform the viewer in sufficient time to take appropriate evasive actions to avoid potential harm from the RFR hazard. They will be legible, non-distracting and non-hazardous in themselves. Signs will not be located where they may be blocked by moveable panels such as doors, windows, racks, gates, etc.

10. Placement of RFR safety signs will advise “Occupational” personnel as well as the “General Population” of potential RFR exposure from the antennas.

c. RESTRICTED AREAS

1. Only authorized personnel are allowed access to the antenna tower sites and/or antenna rooftop sites. At no time are individuals allowed to work in areas that exceed the “Uncontrolled/General Population” exposure limits without a personal monitor. When it is determined that technical personnel must work in fields that exceed the alarm threshold of the RFR personal monitors (i.e., 50% of Controlled/Occupational limits), prior written approval must first be obtained from METRICOM.

d. ENGINEERING CONTROLS

1. RFR MONITORS

i. The RFR personal monitor should be carried inside outer garments or fastened to a shirt or jacket pocket or to a belt using the clip provided on the instrument. Do not locate the unit near any metallic object.

ii. Approach unknown fields cautiously, starting from as far away as possible and extending the RFR personal monitor at arm’s length toward the energy source.

iii. The RFR personal monitor is designed to detect a wide range of frequencies and can be used in most environments.

iv. All personnel performing any activity that will require being 30 feet or less from antennas for six (6) minutes or more must wear approved RFR personal monitors.

v. Before or while site activity is in progress, if the RFR personal monitor issues an alarm, the individual is to discontinue work and calmly move away from the area. If the individual is to remain in close proximity to the radiation source, corrective action such as de-energizing the RF source before returning to the area in question must be performed, unless passage through the area of concern is only incidental. The RFR personal monitor must be kept in an "ON" position and worn while in the controlled area, even after the RFR source has been de-energized. Lock-out/Tag-out procedures must be followed while the RF source is de-energized.

2. *RFR SURVEY EQUIPMENT*

i. METRICOM may request that a survey be performed after any modification to the antenna tower sites and/or antenna rooftop sites or when transmit power levels are increased.

ii. Approved RF survey equipment will be used to perform and document RF surveys. Employees or other potential affected persons may request that a survey be conducted for just cause. METRICOM will evaluate such requests on a case-by-case basis.

iii. Records of surveys will be maintained at METRICOM's corporate office.

e. <u>WORK PROCEDURES</u>

1. BEFORE BEGINNING WORK

i. Before entering the antenna tower area or antenna rooftop area, workers will look for advisory signs that warn of areas having potentially excessive levels of RFR.

ii. If work is be performed within (30) feet of antennas for more than six (6) minutes, approved RFR monitors must be worn.

iii. Transmitter equipment will be controlled by lock-out/tag-out procedures where possible when work is being performed.

iv. Whenever natural light is insufficient to adequately illuminate the work site, artificial illumination shall be provided by licensee or tower owner to enable the employee, technician, contractor, or consultant to perform the work safely.

v. Exposure times should be kept as short as reasonably possible.

vi. Needless exposure to RF fields should be avoided.

2. WHILE PERFORMING WORK:

i. Assume all antennas are active and radiating at full power unless the antenna has been placed in lock-out/tag-out mode. The intermittent nature of communications activity makes it difficult to know the transmitter status for all site transmitters.

ii. Keep a safe distance. During activity on tower antenna sites and/or antenna rooftop sites, personnel should strive to keep their distance from antennas. Be aware of the potential for more than one antenna to impact any given area. Caution must be exercised in accordance with other work practices discussed to insure that close proximity will not lead to excessive RFR exposures. If work is to be performed on antennas or within "Standoff Distances" from antennas, transmitters must be deactivated before beginning work. If in doubt as to where "Standoff Distances" begin for a specific antenna, deactivate transmitters before beginning work.

iii. Be sensitive to time spent in RFR fields. The most reliable practice for complying with RFR exposure limits is to avoid the use of time-averaging provisions of RFR exposure standards. When working near tower mounted antennas or rooftop mounted antennas, workers should avoid unnecessary and prolonged exposure in close proximity to antennas.

iv. Protective clothing. At the METRICOM tower antenna sites and/or rooftop antenna sites, concerns over requiring transmitter shut downs to accommodate maintenance activities may in some situations leave the workers with virtually no apparent options for controlling exposure to RFR. In such circumstances, the worker should consider the use of protective clothing as a means of reducing RFR exposure if the personal monitor indicates exposure is above the standard in areas where work must be performed. Currently, there is no protective clothing that is ideal for all working conditions. While there is a potential to reduce RFR, side effects such as restricted vision and an increase of body temperature to workers, especially in hot environments, limits usage. This option should not be excluded, as more ideal protective gear is likely to become available in the future. METRICOM will continue to review this option as a means of protecting workers from RF radiation.

v. Protect your eyes. The only way to protect against eye damage is to avoid exposure. Never look into an open wave-guide that may be connected to an energized source of radiation. Do not assume conditions are safe on the backside of antennas since RF energy can emanate from these areas due to leaks. Whenever possible, lock-out/tag-out transmitting equipment prior to entering an area of potential RFR exposure.

vi. Sources of RF radiation should be properly shielded to minimize stray radiation.

vii. Never operate transmitters without shields during normal operation.

viii. Do not operate antennas inside equipment rooms.

3. WHEN SITE WORK IS COMPLETE:

   i. Remove equipment from the site and depart area before re-energizing transmitters.

   ii. Report to METRICOM any hardware or configuration changes made to the site, which may create new or altered RFR areas (for example: the addition of transmitters or antennas or change of antenna configuration). METRICOM will update the sites' log and may perform surveys of all new, repaired, or modified equipment to determine the RFR exposure potential.

   iii. Assure RFR personal monitors are turned off to conserve battery life.

4. PRECAUTIONS APPLYING TO RADIO FREQUENCY (RF) TRANSMITTING EQUIPMENT WORK AND INSTALLATION:

   i. Personnel working on open RF transmitting equipment or any radiating device shall deactivate equipment as necessary to avoid non-compliant RF exposure. If possible, simply shut off and lockout the transmitting equipment that you are utilizing or servicing.

   ii. When servicing radio equipment, disconnect or adequately ground transmission lines that may carry RF signals induced from other sources into otherwise deactivated radio equipment. Specific procedures that must be followed for grounding antennas and lines are included in Enclosure 6.

f. RF SAFETY AND HEALTH TRAINING

1. METRICOM requires training based on two different categories of potentially affected people. Awareness training shall be accomplished with reading materials, classroom instruction, and/or RFR awareness videos. Awareness training increases sensitivity of the worker to RFR trouble spots thereby assisting proper compliance with exposure limits. RFR awareness training shall be tailored to meet the degree of potential exposure at the antenna tower sites and antenna rooftop sites as appropriate.

2. The first category includes people not required to have significant technical knowledge beyond their specific operating functions, e.g., custodians, visitors, etc. Category 1 personnel must be provided with a simple understanding of the nature and effects of RFR safety practices such as the purpose of safety shields, why they should not be removed, the reason for posting safety signs, and why access is restricted. Personal monitors shall also be reviewed and conditions that require usage of such monitors shall be outlined.

3. METRICOM and their customers' employees, technicians, contractors, and consultants that are expected to work in "Controlled/Occupational" environments will have Category 2 training to ensure that they understand the RF hazards to which they may be exposed and the means by which the hazards are controlled. Affected employees, technicians, and contractors consist of all those who enter the antenna and equipment installation locations and all those who service and/or maintain RF transmitting equipment. The basis for training for Category 2 will be similar to Category 1 but with more in-depth emphasis for certain categories of information.

4. All individuals entering restricted areas (areas that may result in exposure to RFR above the Uncontrolled/General population level) must wear monitors and know how they work and why they are required to wear them. The monitor must be tested before and after each use in order to ensure that it is working. The worker will be required to sign a statement that the monitor was working properly and operated in accordance with manufacturer's guidelines.

g. METRICOM AND THEIR CUSTOMERS' EMPLOYEES, TECHNICIANS, CONTRACTORS INVOLVEMENT

METRICOM and their customers' employees, technicians, contractors, and consultants who visit the site on a regular basis are encouraged to participate in the structure and operation of the program and in decisions that affect their safety and health. Active participation in the development and implementation

of the RFR safety policy will encourage their understanding and commitment to safe work practices. RF screening measurements may be made in the presence of employees, technicians, contractors, or consultants to facilitate understanding and confidence in the program.

h. MEDICAL SURVEILLANCE PROGRAM AND FIRST AID FOR EXPOSURE TO EXCESSIVE RF RADIATION

1. Remove worker from exposure area to a cool environment and provide cool drinking water.

2. Apply cold water or ice to burned areas.

3. Seek immediate medical attention.

4. Severe RF overexposure may damage internal tissues without apparent skin injury, so a follow-up physical examination is advisable.

5. All RF burns, shocks, implanted medical device failures, or the sensation of non-routine heating must be reported to the designated METRICOM safety officer. Anyone exposed to RFR exceeding the MPE should report to the nearest medical center. METRICOM will attempt to determine the nature of the overexposure and implement corrective actions.

6. All personnel entering the restricted area are required to log in and acknowledge awareness that medical implants may be affected by RF radiation and, if they are using such a device, they enter the site at their own risk.

7. First aid supplies recommended by a consulting physician shall be placed in weatherproof containers (unless stored indoors) and shall be easily accessible to METRICOM personnel. Each first aid kit shall be inspected at least once a month by the safety officer and expended items shall be replaced.

i. HAZARD ASSESSMENT

Hazard assessment is part of the overall METRICOM safety plan. To minimize the potential for overexposure to RFR, the safety inspection checklist (see Enclosure 6) includes a routine inspection of signs, shields, and feed lines.

j. NON-ROUTINE TASKS

Safety training required by METRICOM should include a discussion of non-routine tasks that may be undertaken by METRICOM employees, customers', contractors, consultants, and others.

k. PROGRAM REVIEW

This program will be reviewed annually by METRICOM and updated as often as necessary to ensure that the program reflects METRICOM's current position concerning human exposure to RF radiation. METRICOM will monitor and assess the most current information and incorporate such information into the program.

l. COMPLIANCE REVIEW

1. All of the procedures described in this program must be followed by all affected employees, technicians, contractors and consultants doing work for METRICOM or customers in the RFR areas at the antenna site. Failure to comply with these guidelines could result in disciplinary action up to and including dismissal, being refused future access to the site, removing equipment from the site, and reporting violations to the FCC and/or OSHA. METRICOM also reserves the right to assess charges for RFR compliance costs.

1. This safety plan cannot cover every situation that may be encountered in the workplace, but it does address typical scenarios. If situations that are not covered are encountered, employees, technicians, contractors and consultants should consult their safety officer or METRICOM. In general, never work in an area or on equipment where you might expect to exceed averaged FCC exposure limits without using a personal monitor and without having RFR awareness training and applying appropriate RFR safety practices.

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SECTION V.

V. OSHA 29 CFR 1910.268: TELECOMMUNICATION STANDARDS

Requirements for the RF and microwave industry under OSHA 29 CFR 1910.268 apply to all employees, technicians, contractors and consultants doing work for METRICOM in the RFR areas at the antenna tower site, antenna rooftop site, or transmitter area. This section of the OSHA rules sets forth safety and health standards that apply to the work conditions, practices, means, methods, operations, installations and processes performed at telecommunications centers which are located in building spaces. Telecommunications center work includes the installation, operation, maintenance, rearrangement, and removal of communications equipment and other associated equipment in telecommunications switching centers. Field work includes the installation, operation, maintenance, rearrangement, and removal of conductors and other equipment used for signal or communication service, and of their supporting or containing structures, overhead or underground, on public or private rights of way, including buildings or other structures. Compliance with all aspects of this written safety plan will ensure compliance with the requirements of 29 CFR 1910.268.

Telecommunications transmitter sites contain numerous hazards, beyond whatever hazard may be presented from potential exposure to high intensity RFR fields near active antennas. These include trip hazards, electrical shock hazards and falling hazards. While an area may not appear to be a fall hazard area, certain antennas may have the potential to shock or burn a worker, which in turn could cause him to fall backwards into an unprotected area. Another non-RF hazard is the potential for falling tools from elevated levels.

METRICOM is committed to maintaining a safe work environment. Although this written safety plan contains the guidelines which, if implemented, will ensure the ongoing safety of all personnel, it is the responsibility of each individual to maintain a personal commitment to the safety of themselves and others with whom they work.

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SECTION VI.

A. LOCK-OUT/TAG-OUT PROTOCOLS

Maintenance rarely follows a set pattern since each job tends to be different. A clearly defined policy covering the positive locking of switches during maintenance work will prevent injury on the job that can result from the accidental release of closed switches.

B. SCOPE

This program covers the requirements for lock-out/tag-out by any individual, to prevent the release of materials and for isolation of energy sources such as, but not limited to, chemical, electrical, thermal, mechanical, pneumatic, hydraulic, and RF radiation during servicing and maintenance of machines and equipment.

C. DEFINITIONS

***Lock-out*:** Utilizing a lock on a power source with a lock-out device that physically holds an energy control point, such as a lever or switch in the "off" position and makes it impossible to operate.

***Tag-out*:** The placement of a written warning that tells co-workers not to operate a switch or lever that could release hazardous energy or set a machine in motion. Though the tag acts as a warning device, it does not physically prevent someone from releasing the energy.

Lock-out and Tag-out: Procedures designed and implemented to protect workers from the accidental release of energy. Success is dependent upon understanding and using the procedures outlined in this program.

J. D. POLICY

1. METRICOM maintains a program to provide safe equipment and usage for all employees, technicians, contract workers, licensees, tenants and consultants. All individuals servicing an antenna tower site or antenna rooftop site for METRICOM are responsible for performing their duties in the safest manner possible and for minimizing hazards to themselves, to other personnel, and to equipment.

2. All METRICOM personnel are authorized to use locks and tags upon completion of appropriate training. Use of locks and tags will protect themselves and other personnel at the site from potential danger.

3. Locks and tags are not to be used over extended periods of time nor in lieu of permanent safeguards. Padlocks are to be used as necessary to secure main electrical disconnects switches.

4. Danger tags shall be used when working on unlocked equipment covered by this procedure.

5. Notice tags are for use when it is necessary to attach written instruction to equipment.

K. E. PROCEDURES

1. Making sure equipment is safe

a. Notify the site owner or operator prior to shutting off power to any transmitting facility.

b. Make sure before beginning to work that equipment is disconnected from its source of power, if possible, or that all push buttons or remote controls are positioned and locked or tagged securely so that the lock and tag cannot be accidentally detached.

c. Contact the Site Safety Officer if you are not certain that the equipment has been properly locked out.

2. Use of Locks and Tags

a. Locks and tags are available at the company truck if the worker does not have his own lock.

b. Locks and tags should be left on equipment temporarily overnight and over weekends when work is incomplete and temporarily suspended. Site owners and operators must be made aware during any situations in which this condition will exist.

c. Tags and locks should be removed promptly when work is completed in order to avoid unnecessary delay and potential confusion.

d. When more than one individual is working on a piece of equipment, group lock-out/tag-out procedures will follow the procedures for a single lock-out.

e. The last worker to remove his lock or tag will notify the designated Site Safety Officer.

3. Responsibilities of Designated Site Safety Officer

a. Ensure that locks and tags are available on the company truck.

b. Ensure that lock-out/tag-out procedures are being properly followed.

c. Verify that tags or locks can be removed and equipment can be started safely if a worker is not able to remove his own tag or lock after a job is completed and the equipment must be made operative.

d. It is the Safety Officer's responsibility to see that all employees, technicians, contractors, licensees, tenants and consultants obey all company rules. This includes wearing required safety equipment and personal RFR monitor.

4. Training

a. Training on lock-out/tag-out procedures will be provided to employees, tenants and licensees. Training will be fully documented, including name of the trainee and trainer, dates of training, and indication as to whether the employee is a user or nonuser of lock-out/tag-out procedures.

b. Training will be given to all new personnel as necessary concerning the lock-out/tag-out process. Employees that will not be directly affected by lock-out/tag-out must still be trained on the importance of the danger tag, and understand that they cannot operate or alter the position of either the danger tag or the equipment that it is identifying.

c. There will be annual training to ensure that the purpose and function of the energy control program (tag-out program) is understood by all employees and that the knowledge and skills required for safe application, usage and removal of the energy controls are acquired by employees. The basic training for tags and locks includes:

   i) Tags may invoke a false sense of security and their meaning needs to be understood as part of the overall energy control program.

   ii) Tags are essentially warning devices affixed to isolating devices and do not provide the physical restraint on those devices that a lock provides.

   iii) When a danger tag is attached to an isolating device, that device is not to be operated under any circumstance, and the tag must not be removed, ignored or otherwise defeated.

   iv) Tags and their means of attachment must be made of materials, which will withstand the environment conditions encountered in the workplace.

   v) Danger tags must be legible and understandable to be effective.

   vi) Danger tags must be securely attached to the isolating device so they cannot be inadvertently or accidentally detached.

   vii) Violation of the lock-out/tag-out procedure will result in corrective action. Corrective action could include days off without pay or termination.

d. Re-training will be required under the following circumstances:

i) Annually

ii) When there is a change in lock-out/tag-out procedures.

iii) When an audit or incident reveals deviations from established procedures.

iv) When there are changes in machines, equipment or job assignments (only the workers affected).

v) When there appears to be deficiencies in any employees' understanding of the program.

vi) The retraining shall re-establish employee proficiency and introduce new or revised control methods and procedures, as necessary.

LOCK-OUT/TAG-OUT QUIZ

PRINTED NAME: _____

_____
SIGNATURE OF PERSON COMPLETING QUIZ

_____ _____
SOCIAL SECURITY NUMBER DATE OF QUIZ

CIRCLE THE LETTER OF CHOICE FOR YOUR ANSWER

1. Any employee can lock-out a machine.

A. True **B. False**

2. It is impossible to activate equipment that has been locked-out.

A. True **B. False**

3. All switches, controls, and buttons should be placed in the "off" position during lock-out/tag-out procedures.

A. True **B. False**

4. After the job has been completed and the isolation devices and locks removed, the tags should be:

A. Left on the equipment for the rest of the day so other workers will know it had been locked out.

B. Removed, signed and turned into the designated Site Safety Officer as soon as the job has been completed.

C. Left for the designated Site Safety Officer to remove once he is sure the equipment operates properly.

5. If the job isn't finished in one day, the worker leaving the job site should:

A. Leave his lock on and remove it the next day.

B. Remove his lock and leave.

C. Wait until he has completed his work before removing his own lock.

6. **A final check of all start buttons and levers should be made to release any stored energy and to make sure that you have isolated the right energy source.**

A. True **B. False**

7. **Most equipment will have more than one source of energy.**

A. True **B. False**

8. **It is okay not to lock-out a piece of equipment you are working on as long as you can see the control switches from where you are working.**

A. True **B. False**

9. **Lock-out and tag-out procedures are for maintenance personnel only.**

A. True **B. False**

10. **If three people are working on the same equipment, only one tag needs to be attached to the isolating device as long as they have all used their own locks.**

A. True **B. False**