

Course Title: Radiological Control Technician
Module Title: Communication Systems
Module Number: 2.02

Objectives:

- 2.02.01 Explain the importance of good communication.
- 2.02.02 Identify two methods of communication and be able to determine different types of each.
- 2.02.03 Describe different types of communication systems.
- 2.02.04 Describe the FCC and DOE guidelines regarding proper use of communication systems.
- 2.02.05 Describe general attributes of good communications.
- 2.02.06 Explain the importance of knowing how to contact key personnel.
- ☞ 2.02.07 Identify the communication systems available at your site and methods available to contact key personnel.
- ☞ 2.02.08 Describe the emergency communication systems available at your site.

References:

(Add any site-specific references.)

2.02.01 *Explain the importance of good communication.*

IMPORTANCE OF COMMUNICATION

Good communication is important in everyday life to make sure our message is clear, understood, and received. A clear concise communication eliminates confusion and the possibility of misunderstanding. It is important that the receiver understand the communication without unnecessary interpretation or guess work. For a communication to be completed there must be a receiver. The receiver is the person or group that the communication is intended. For a good communication process there must be a clear concise message, a medium of transmission (i.e. telephone, telegraph, E-mail, letter, signal flag, etc.), and a receiver. If a response is required by the receiver, this can serve as confirmation of reception of the communication, however, a response alone does not indicate the communication was understood correctly. Misunderstanding of communication can potentially cause personal as well as physical damage to equipment and surroundings.

In all communication processes, a sender of the communication must not assume knowledge that is needed for safe execution of the desired response. The communication must contain all pertinent information. Assuming or hoping the receiver has a given understanding of a process can lead to an unsafe condition. This is especially true in emergency situations that require immediate action or response. Make sure in all communications that desired responses are not outside the abilities or scope of the individual or group.

2.02.02 *Identify the two methods of communication and be able to determine different types of each.*

METHODS OF COMMUNICATION

In today's atmosphere of technology, there are methods of communications that seemed unlikely just 20 years ago. Who would have thought that a car phone would be as common as a home telephone. In general, communication can be broken into two groups, verbal and nonverbal.

Verbal methods of communication include talking directly to another person, telephone conversation, voice mail, video tele-conferencing, and various other available mediums. Verbal methods generally allow discussion of details followed by questions and/or an

immediate response. Verbal communication allows flexibility in the message along with added information without too much difficulty in transmission.

Nonverbal methods of communication include signs, letters, signals, gestures, documents, E-mail, and various other available mediums. Nonverbal methods can limit the amount of information transmitted due to the difficulty in the transmission method.

2.02.03 Describe different types of communication systems.

COMMUNICATION SYSTEMS

There are several communication systems available at most DOE sites. These may include public address system, telephones, two-way radio, pagers, computer mail system, and computer based bulletin boards. Following is a brief generic description of each of these communication systems. The description is not meant to be all inclusive, but a cursory overview of key aspects of each system.

Public Address

The public address system consists of loud speakers and calling stations located throughout an area to provide audible notification to all personnel within the area. The public address system may be used for routine messages, contacting groups or individuals, items of interest to the general population, and emergency notifications or warnings. The public address system should be administratively controlled to ensure effectiveness in contacting facility personnel and availability during emergency conditions.

Telephones

Telephones provide a means for point to point communication. The telephone may be considered semiprivate when compared to the public address system, however while on a DOE facility, all calls are subject to monitoring for security reasons. The telephone system may offer the ability to leave a voice message whenever the receiving party is unavailable. The telephone system provides communication, but is subject to usage by other individuals which may impede your contacting the person or persons needed in an emergency situation.

Two-way Radio

Two-way radio communication provides a direct link to other individuals on your frequency or net. Although "traffic" on the radio may impair your message from being clearly understood, usage is controlled by possession of a radio with the correct

frequency. Radio communication is subject to interference by outside sources, which may garble or mask the message. This may be of significance during emergency situations when location or type of emergency in progress must be relayed to response teams. Two-way radios do provide mobility and access while at remote locations.

Pagers

Pagers are small electronic devices capable of receiving signals from the telephone system to alert the carrier of intended communication from another party. Pagers provide access to personnel while away from the work location. Most pagers provide only a voice message or phone number to contact. Pagers normally do not allow the carrier to respond directly to the page verbally. Pagers provide a means of contacting personnel when their whereabouts are unknown, but are assumed to be within the site boundaries or very nearby.

Computer Mail Systems

Computer mail systems provide communication between computer terminals. Most systems are linked via a local area network. This link enables users to contact individuals or groups directly and leave written messages for these individuals to receive. Computer mail systems enable the user to contact receivers directly while other users are unaware.

Computer Bulletin Boards

Computer bulletin boards provide communication to anyone with access to the bulletin board. The user provides messages or information without knowing who will receive the information. Usually messages and information of general subject matter or routine information that apply to most users are available on a bulletin board. Most bulletin boards are controlled with minimal requirements for access. Bulletin boards provide a means for communicating with a large diverse group.

2.02.04 *Describe the FCC and DOE guidelines regarding proper use of communication systems.*

FCC AND DOE RULES AND REGULATIONS

When using communication systems licensed by the Federal Communications Commission and operated by the Department of Energy, one cannot:

- Use profane, indecent, or obscene language.
- Willfully damage or permit radio equipment damage.
- Cause malicious interference with any radio communications.
- Intercept and use or publish the contents of any radio message without the permission of the proper authorities.
- Make unnecessary or unidentified transmissions.
- Transmit without first making sure that the transmission will not cause harmful interference.
- Make any adjustments, repairs, or alterations to a radio transmitter without licensing by the FCC or acceptable equivalent.
- Transmit a call sign, letter, or numeral which has not been assigned to your station.
- Rebroadcast another transmission (ie radio station music).

2.02.05 *Describe general attributes of good communications.*

GENERAL ATTRIBUTES OF GOOD COMMUNICATIONS

- Minimize the use of abbreviations and acronyms. Only abbreviations and acronyms from an approved list should be used in facility communication.
- Make all oral instructions clear and concise. Do not include multiple actions in a verbal instruction which may get confused or misunderstood.
- Ensure the identity of the person(s) is/are clearly understood. Identify yourself and your position, and ensure that you know to whom you are speaking.
- Use clear, precise terminology. Do not use slang terms. Avoid words that sound alike. Use commonly agreed upon terms. Employ the phonetic alphabet for clarification. (See Table 1)

Table 1. Phonetic Alphabet and Numbers

A - Alpha	J - Juliett	S - Sierra	1 - One
B - Bravo	K - Kilo	T - Tango	2 - Two
C - Charlie	L - Lima	U - Uniform	3 - Three
D - Delta	M - Mike	V - Victor	4 - Fower
E - Echo	N - November	W - Whiskey	5 - Fife
F - Foxtrot	O - Oscar	X - X-Ray	6 - Six
G - Golf	P - Papa	Y - Yankee	7 - Seven
H - Hotel	Q - Quebec	Z - Zulu	8 - Eight
I - India	R - Romeo	. - Point	9 - Niner
			0 - Zero

- Repeat back messages, either paraphrased or verbatim.
- Speak distinctly and deliberately.
- Acknowledge all communications.

2.02.06 *Explain the importance of knowing how to contact key personnel.*

CONTACT OF KEY PERSONNEL

The importance of knowing how to contact key personnel can not be understated. The importance lies in getting the knowledgeable people at the location they are needed. This can apply to emergency situations, routine circumstances, or nonroutine circumstances. The ability of the RCT to contact key personnel can reduce personnel injury, equipment damage, uncontrolled radioactive release, unrestricted movement of controlled materials, and other important actions. The RCT must be aware of the location of communication equipment, phone numbers or pager numbers, and/or emergency numbers regardless of location. Familiarity with the working environment will reduce the time needed to

contact key personnel. The RCT must be aware of the location, situation, and personnel or equipment involved. This information must be relayed without misinterpretation to key personnel to afford proper response.

2.02.07 *Identify the communication systems available at your site and methods available to contact key personnel.*

SITE COMMUNICATION SYSTEMS

(Insert site specific information here.)

2.02.08 *Describe the emergency communication systems available at your site.*

SITE EMERGENCY COMMUNICATIONS

(Insert site specific information here.)

SUMMARY

This lesson has covered topics related to effective communications, contacting key personnel, and emergency communications. As an RCT you should be aware of your location and what communication systems are available to you while working on any job or situation.

This page intentionally left blank.