

TITLE 29: EMERGENCY SERVICES, DISASTERS AND CIVIL DEFENSE
CHAPTER I: EMERGENCY MANAGEMENT AGENCY
SUBCHAPTER c: ADMINISTRATION AND ORGANIZATION OF POLITICAL
SUBDIVISION EMERGENCY SERVICES AND DISASTER AGENCIES

PART 320
RADIOLOGICAL PROTECTION
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SUBPART A: RADIOLOGICAL EQUIPMENT

Section 320.100 Purpose

The purpose of this Subpart is to inform local emergency service and disaster agencies about procedures that are necessary to acquire, maintain and safeguard radiation detection equipment for radiological training and emergency operations.

Section 320.110 Policy

This Subpart outlines procedures for the acquisition of radiation detection instruments by local governments; reporting instrument loss resulting from theft or other means; and, custodial operational checks to ensure the operability of the instruments at all times.

Section 320.120 Definitions

"Accredited Emergency Services and Disaster Agency" means the Emergency Services and Disaster Agency of a political subdivision which has been certified by the Illinois Emergency Services and Disaster Agency as having met the requirements to be recognized as an established Emergency Services and Disaster Agency in the State of Illinois according to 29 Ill. Adm. Code 300.40.

"Blast Over-Pressure" means blast waves resulting from a nuclear explosion that

causes a pressure in excess of the normal atmospheric value.

"Emergency Information Reporting Stations (EIRS)" means a facility with reliable communication instruments and trained monitors that are designated for the collection and reporting of emergency information.

"Emergency Operations Center (EOC)" means a protected site from which civil government officials can exercise direction and control of operations in an emergency.

"Emergency Services and Disaster Agency (ESDA)" means the Emergency Services and Disaster Agency of a political subdivision, or an interjurisdictional Emergency Services and Disaster Agency.

"Fallout Shelter" means an area that can provide refuge and protection against radiation.

"FEMA" means the Federal Emergency Management Agency.

"IDNS" means the Illinois Department of Nuclear Safety.

"IESDA" means The Illinois Emergency Services and Disaster Agency.

"Increased Readiness" means a state of emergency preparedness during a time when world tensions are high and the probability of a nuclear attack is imminent. Emergency preparedness is designed to minimize the effects of a nuclear attack upon our civilization and to provide for the most efficient recovery following such an occurrence.

"In Shelter or Attack Phase" means a state of emergency preparedness during a time when a nuclear attack upon the United States has begun or dangerous radioactive contaminants have been released into the atmosphere requiring residents to seek shelter for safety.

"Local Government" means counties, incorporated cities, villages and towns, and townships.

"Maintenance and Calibration (M & C)" means a facility within IESDA where radiation detection equipment is repaired, modified and calibrated.

"Milliroentgen (mr)" means a submultiple of the roentgen equal to 1/1000 of a roentgen.

"Milliroentgen per hour (mr/hr)" means a measure of gamma radiation expressed in terms of 1/1000 of one roentgen per hour.

"Non-resident Training" means radiological personnel training that is provided through FEMA-approved courses that are offered at state and local government level by certified radiological protection instructors.

"NRC" means the Nuclear Regulatory Commission of the United States Government.

"Post Shelter Phase" means a condition following a nuclear attack or other radiological emergency when recovery operations have begun and when it is safe for residents to leave their shelters.

"Protection Factor (PF)" means a theoretical value that defines the ratio of the exposure rate from Gamma radiation to be expected in a protected location compared to the exposure rate expected with the same amount of radiation in a completely unprotected location.

"PSI" means pounds per square inch.

"Radiation Detection Instruments" means radiation survey meters that are used in determining contaminated areas and exposure rates and exposure measuring instruments that are used for recording the total amount of an individual's exposure to radiation.

"Radiological Monitor" means radiological response personnel trained to detect and measure radiation using appropriate radiation detection equipment and trained to advise appropriate personnel accordingly.

"Radiological Protection Officer (RPO)" means the principal technical advisor within local government or state government emergency operations centers on matters pertaining to radiological protection.

"Radiological Protection Program (RPP)" means a state or local program that includes plans, procedures and systems designed to monitor, report and evaluate the radiological conditions resulting from a radiological emergency.

"Radiological Response Technician" means an emergency team member who is recruited from the spectrum of public and private sector emergency services, essential services and vital facilities who is responsible for providing technical support to the emergency services unit at the scene of an accident involving radioactive material.

"Resident Radiological Training" means radiological personnel training that is provided through FEMA-approved courses where student attendance at the National Training Academy in Emmittsburg, MD is required in resident status.

"Roentgen (r)" means a unit of exposure to gamma radiation.

"Roentgen per hour (r/hr) means a measure of the unit exposure to gamma radiation.

"Self-protection Stations" means state and local government facilities that are used for the protection of life and property, such as fire, police, welfare and rescue facilities.

Section 320.130 Standards for the Acquisition of Radiation Detection Instruments

- a) Radiation detection instruments are contained in CD V-777-1 Kits and CD V-777-2 Kits. These kits may be used in either mobile monitoring or recovery missions in response to an accident or incident involving the release of radioactive contaminants into the environment. Local government agencies that want to acquire these kits must request them from the IESDA Radiological Protection Office through the IESDA Regional Coordinator. Radiation detection instruments and kits shall be issued if the requirements of subsection (320.130 (b)) below are met.
- b) Requirements for the acquisition of radiation detection kits:
 - 1) There must be two trained radiological monitors for each self-protection station, EIRS and EOC facility.
 - 2) In order to acquire instruments to equip either a self-protection station or EIRS, telephone and/or radio equipment must be made available and operational with 2-way communication capability between the station, EIRS and EOC.
- c) The minimum number of radiation detection kits recommended for each county is contained in Exhibit A. The quota cited in Exhibit A is a guideline and additional kits may be requested as necessary.
- d) Types of radiation detection training equipment including radiation detection kits and their content are located in Exhibit B.
- e) Procedure for ordering CD V-777-T Training Kit and CD V-778 Training Source Set. The CD V-777-T and the CD V-778 shall be requisitioned by local governments in the following manner:
 - 1) CD V-777-T Training Kit.
 - A) One copy of the "Applications for Radiological Protection

Trainings Kits" (RP Form 101) along with a statement indicating the time, location and the proposed date of radiological training shall be forwarded to the appropriate local ESDA coordinator who shall act as custodian of training kits. Local governments may request RP Form 101 from the IESDA Field Services division through their Regional Coordinator.

B) Training kits shall be issued by the local ESDA Coordinator upon the applicants compliance with this requirement.

2) CD V-778 Training Source Set.

A) Local government eligible applicants are those who possess a current source set user permit. A user permit may be obtained in accordance with Section 320.320. Local government eligible applicants may obtain a training source set from their local government source set custodian.

B) Source sets will be issued only for FEMA approved radiological training courses in accordance with "Management Plans for Radiological Series", TD-100, dated September 1984. A copy of this FEMA publication is available from IESDA at 110 East Adams Street in Springfield or from FEMA at 500 C Street, Southwest, Washington, DC 20024. Local government eligible applicants shall be issued a CD V-778 training source set only for the duration of the course.

3) Documentation: Upon receipt of any training kit (CD V-777-T) or source set (CD V-778) the recipient shall complete the "Receipt and Transfer Form" (RP Form 103) in the presence of the local custodian. The local custodian will retain one copy, return one copy to the user and forward the third copy to IESDA M & C Shop Manager.

f) Requisition procedures for additional kits and instruments. If a local government increases its number of EIRS, self-protection station or public fallout shelter beyond those recommended in Exhibit A, then the number of radiation detection kits recommended for that government in Exhibit A would also increase. If a local government desires additional radiation detection kits, then they must be requested by that government. To request additional kits, the local official shall write to the appropriate regional coordinator and inform that person of the increased location(s) and the quantity of additional kits desired. A local government requesting a radiation detection kit must certify in writing that the standards of subsection (320.130 (b)) have been met. If these conditions are met, kits will be issued on a first-come-first-served basis.

- g) Record for all kits: Paragraph 3.1.1 of the FEMA publication entitled "Use and Maintenance of the RADEF Station (State Users Manual)" dated September 25, 1978 requires that all shelter locations be assigned a station identification number. The IESDA will assign a station identification number to all EIRS, shelters and self-protection stations within the state. All correspondence shall reference the assigned station identification number.

Section 320.140 Defective Instruments

- a) Should any instruments be found defective while performing an operational check, the local government ESDA shall report the defect to the respective IESDA Regional Coordinator. The IESDA Regional Coordinator shall report the defect to either the IESDA M & C Shop Manager or to the IESDA Radiological Protection Officer.
- b) Arrangements shall be made between the IESDA Regional Coordinator and the IESDA M & C Shop Manager for transfer and exchange of the defective instrument.
- c) Subsequent follow-up to the IESDA M & C Shop by local governments concerning the status of defective equipment may be made to either the IESDA Radiological Protection Officer or the IESDA M & C Shop Manager.

Section 320.150 Stolen or Lost Instruments and/or Kits

- a) Should any radiological instrument or kit be stolen, the local government concerned shall report the loss immediately to the police and request an investigation. The local government shall send a copy of the police report along with a letter requesting replacement of the stolen kit and/or instrument to the IESDA Regional Coordinator. The Regional Coordinator shall then forward a copy of the police report along with a replacement recommendation to the IESDA Radiological Officer.
- b) A report shall be made immediately to the IESDA Regional Coordinator by the local government whenever the local government discovers a missing radiation detection instrument or a missing radiation detection kit and determines that either item was lost and not stolen. A follow-up written report concerning circumstances involved in the loss shall be sent to the IESDA Regional Coordinator within five work days following the loss. At a minimum the report shall address the following:
 - 1) Where the loss occurred.
 - 2) Time the loss was discovered.

- 3) Explain in detail circumstances that led to the loss.
 - 4) Explain efforts that were used to find the instrument and/or kit.
 - 5) Explain what action is being taken to prevent a recurrence of the incident.
 - 6) Request replacement, if desired.
 - 7) The IESDA Regional Coordinator shall forward a copy of the written report to the IESDA Radiological Protection Officer along with a recommendation.
- c) The Manager of the IESDA M & C Shop shall replace radiation detection instruments and/or radiation detection kits that have been lost or stolen upon notification of the IESDA Radiological Protection Officer.
- d) If a radiation detection kit and/or instrument is reported either lost or stolen, a report of the circumstances surrounding this loss or theft shall be made immediately to the appropriate IESDA Regional Coordinator by the local government. The Regional Coordinator will then notify the IESDA Radiological Protection Officer.

Section 320.160 Operational Checks

Operational checks shall be performed semiannually on all radiation detection instruments issued to local governments. Therefore, operational checks shall be performed by either the local government ESDA coordinator, the radiological monitor or the local government radiological protection officer. Only procedures authorized in Chapter 5 of the FEMA Radiological Defense Manual (CPG 2.62), June 1977, edition, shall be used in conducting operational checks. A copy of this FEMA publication is available from IESDA or FEMA at the addresses in Section 320.130.

SUBPART B: RADIATION DETECTION KIT EXCHANGE

Section 320.200 Purpose

The purpose of this subpart is to establish procedures whereby radiation detection kits in the possession of local governments are exchanged at pre-established four-year intervals.

Section 320.210 Policy

- a) Radiation detection kits are loaned by the IESDA to local governments throughout the state. Such disbursements are made for the purpose of protecting the health and safety of residents of the State of Illinois in the event of a nuclear emergency. Upon receipt of radiation detection instruments that are contained in

radiation detection kits, local government officials shall prepare and maintain an updated inventory in order to account for these instruments and kits.

- b) Periodically, radiation detection instruments that are contained within each radiation detection kit must be calibrated, repaired or retrofitted. Therefore, a recall of these instruments or kits distributed to the various agencies must be initiated. Whenever this occurs, radiation detection instrument or radiation detection kit exchange procedures are initiated to ensure that the radiation detection capability is not hindered.

Section 320.220 Radiation Detection Kit Exchange Procedures

- a) Radiation detection kit exchange procedures are as follows:
 - 1) Radiation detection kits in the possession of federal, state and local agencies will be exchanged on a four-year cycle through the IESDA M & C Shop on a kit-for-kit basis.
 - 2) The radiation detection kits in the possession of local governments except Cook County, will be exchanged on a kit-for-kit basis through the county ESDA office. Arrangement for radiation detection kit exchange for local governments located in Cook County and counties that do not have ESDAs shall be made through the local government within that county. Arrangements for pick-up and delivery of radiation detection kits shall be made between the county ESDA coordinator or, in the case of Cook County and counties that do not have ESDAs, between the local government and the IESDA M & C Shop Manager at least one month before the scheduled exchange. The County ESDA Coordinator except Cook County and counties that do not have ESDAs, is the point of contact through which local governments shall exchange radiation detection equipment.
 - 3) Any radiation detection instrument or associated equipment that needs to be sent to the IESDA M & C Shop for any reason shall be transmitted through the IESDA Regional Coordinator's office pursuant to instructions contained in subsection (320.130(g)) of Subpart A.
- b) Instrument Serial Numbers. Since radiation detection kit exchange will occur on a kit-for-kit basis, local governments shall ensure that each radiation detection kit contains only the type, model, and quantity of instruments that have been assigned to that particular kit. Each radiation detection kit will contain the type and quantity of items shown in Exhibit B. Radiation detection kits with missing radiation detection instruments or radiation detection kits with inappropriate

radiation detection instrument model counts shall be so noted. The IESDA M & C Shop will not give full credit for radiation detection kits missing any radiation detection instruments and Associated equipment.

AGENCY NOTE: THE IESDA M & C SHOP WILL NOT ACCEPT RADIATION DETECTION INSTRUMENTS OR RADIATION DETECTION KITS FROM ANY SOURCE OTHER THAN AN IESDA REGIONAL COORDINATOR, A COUNTY ESDA COORDINATOR, FEDERAL OR STATE AGENCIES OR, IN COOK COUNTY, THE LOCAL GOVERNMENT DESIGNEE.

SUBPART C: RADIOACTIVE TRAINING SOURCE SETS

Section 320.300 Purpose

The purpose of this Subpart is to establish procedures that are to be followed by authorized users of radioactive training source sets. These procedures have been developed to safeguard the user and supervise the use of radioactive training source sets. Policies established in this Subpart apply to sets being stored or used in support of radiological protection training programs conducted within the State of Illinois. Furthermore, it establishes policy consistent with the Nuclear Regulatory Commission licensing requirements (10 CFR 30) for byproduct material.

Section 320.310 Policy

- a) The Nuclear Regulatory Commission has issued a by-product material license to the Illinois Emergency Services and Disaster Agency. This license authorizes IESDA to receive, possess, acquire, use, transfer or otherwise dispose of by-product materials. Pursuant to the provisions of the NRC license, IESDA will issue user permits in accordance with the rules outlined in Sections 320.320 and 320.330. IESDA shall exercise strict control and accountability for all by-product material in its possession.
- b) The procedures regarding radiological exposure control, storage, safety, handling and transportation are designed to satisfy Federal requirements (10 CFR 20) as well as to ensure the safety and well-being of individuals who may become users of the radioactive training source set.

Section 320.320 Eligibility

The following criteria shall be used to determine eligibility for a radioactive training source set user permit:

- a) Local government ESDA Coordinators who desire to have individuals within their jurisdiction qualify for a user permit shall submit a request through their appropriate IESDA Regional Coordinator indicating the individuals name,

position and previous radiological protection training. The IESDA Regional Coordinator shall review the request and forward a recommendation to the IESDA Radiological Protection Officer.

- b) In order to qualify for a user permit each applicant must be a graduate of each of the following FEMA approved Radiological Protection Courses.
 - 1) Fundamentals Course for Radiological Monitors (FCRM)
 - 2) Fundamentals Course for Radiological Response Teams (FCRRT)
 - 3) Radiological Monitors Instructors Course (RMIC)
- c) Local ESDA government applicants who have not met training requirements may enter IESDA's radiological training program by making arrangements with either the IESDA Training Office or the IESDA Radiological Protection Officer through their appropriate IESDA Regional Coordinator.

Section 320.330 Issuance of Permits

- a) The IESDA Director shall issue user permits upon the certification of the IESDA Radiological Protection Officer that the applicant has completed all required training.
- b) User permits will be valid for three years from the date of issuance unless circumstances arise that would require revocation. Such circumstances would be:
 - 1) Failure to correctly handle, store and safeguard radiological source sets in accordance with 10 CFR 20 and the requirements of this part.
 - 2) An authorized user who leaves the State for a permanent change of residence.
 - 3) An authorized user who for any reason requests revocation of his/her permit.
- c) The IESDA Radiological Protection Officer shall, upon notification of the IESDA Director, issue authorized users a renewed permit at least 30 days prior to the expiration date of their current users permit.

Section 320.340 User Permit Holder Records

- a) The IESDA Radiological Protection Officer and the IESDA M & C Shop

Manager shall maintain a list of the names, addresses and telephone numbers of all qualified users.

- b) Local governments shall notify the IESDA Radiological Protection Officer of permanent changes to telephone numbers and mailing addresses of local government user permit holders.

Section 320.350 Custodians of Radiological Training Source Sets

- a) A custodian is an authorized user permit holder who volunteers to store and have available a training source set that is accessible to radiological instructors in his or her area. Because of limited quantities, training source sets will be distributed in a manner that will be accessible to radiological instructors in all IESDA regions of the state. A custodian must provide storage for radiological training source sets that meets the requirements of 10 CFR 20.
- b) Custodians shall adhere to the following procedures:
 - 1) A custodian may loan any holder of a valid user permit temporary custody of not more than one radiological training source set.
 - 2) Whenever a radiological training source set is loaned to a user permit holder by a custodian, it must be returned within seven days from completion of the training course for which it was borrowed.
 - 3) Custodians are responsible for ensuring that each individual who borrows a radiological training source set has a valid user permit.
 - 4) The appropriate receipt and transfer form (see Subsection 320.130(e)(3)) must be completed in triplicate before a radiological training source set can be loaned or returned.
 - 5) Each custodian shall adhere to 10 CFR 19, 20 and 30, dated July 29, 1983, and IESDA Rules.

Section 320.360 Radiological Training Source Set Storage Location Criteria

- a) Permanent storage locations of radiological training source sets cannot be changed without written approval of the IESDA Radiological Protection Officer or the IESDA Director. Approval shall be granted if the new location has met the conditions set forth in Section 320.370 of this Subpart.
- b) No person, other than the IESDA Radiological Protection Officer or the IESDA

Director, may reassign a storage area for radiological training source sets.

- c) Temporary storage areas will be selected on the basis of security. Temporary storage areas shall have restricted entry and shall not be open to the general public.

Section 320.370 Permanent Storage Area Survey Record

- a) Each custodian of a radiological training source set shall make a sketch of the permanent storage area and indicate the location of the radiological training source set in their possession with the proximity of other areas of the building.
- b) Using a CD V-700 low range survey meter with the shield closed, each custodian shall survey outside of the access doors and any exterior walls of the room where the source set is stored. The outside radiation survey levels shall be recorded on the sketch.
- c) Any reading in excess of 2 mr/hr shall be reported to the IESDA Radiological Protection Officer.
- d) Area surveys shall be made on each January and July.
- e) New surveys are required if the permanent storage area is altered or if the number of radiological training source sets has changed.
- f) The IESDA Radiological Protection Officer shall inspect each storage area annually to determine if the requirements of 10 CFR 20 and this part are being complied with.

Section 320.380 Procedures for Handling Radioactive Training Source Sets During Transportation and Storage

- a) Source sets that are being transferred shall be handled and transported by either an authorized user, custodian or an Illinois Commerce Commission licensed carrier.
- b) Whenever the radioactive training source set is being transported or stored, the radioactive capsules shall be enclosed in the CD V-791 small lead container which shall be enclosed inside the CD V-792 large lead container. The CD V-792 large lead container shall be secured by two padlocks.
- c) The two standard radioactive yellow II labels that are on the CD V-792 large lead container shall be visible at all times.
- d) No vehicle placards are necessary when transporting radioactive training source sets.

- e) The shippers certification for restricted articles "RP Form 106" shall be with the radioactive training source set whenever it is being transported from one location to another.
- f) Permanent storage areas in which the radioactive training source sets are stored shall be posted with a standard size 8½ inch x 11 inch "Caution...Radioactive Material" signs. Below this sign shall be a 3 inch x 5 inch card showing the name, address and telephone number of the person to contact in case of an emergency. All radioactive training source sets shall be secured against unauthorized removal. The radioactive training source set shall be secured in a locked cabinet, vault or room at all times when not in use.
- g) The radioactive training source set shall also be supplied with six 6 inch x 8 inch "Danger Radiation Area" signs which shall be used to post the training area.
- h) Remote handling tongs, 18 inches long, shall be used should the sealed capsules need to be removed from the sealed container during storage or while being transported. Radioactive needles shall not, under any circumstances, be removed from the sealed capsules.

Section 320.390 Student Safeguards During Radioactive Source Set Training

- a) The CD V-138 (0-200 mr) and the CD V-742 (0-200 r) dosimeter will be worn by the instructors and students while the radioactive training source set is being used for training. Exposure readings appearing on the dosimeter shall be recorded on the students individual exposure record forms.
- b) Students shall be warned against picking up capsules with their hands and they shall be observed to ensure compliance.
- c) Whenever leak tests are performed in class, the instructor shall ensure that they are carried out in accordance with leak testing procedures outlined in Exhibit C of this rule.
- d) Whenever radioactive capsules are removed from their lead container, students should be kept a distance of at least 18 inches as a precautionary measure against radioactive exposure.

Section 320.400 Procedures to Follow When Radioactive Training Capsules Are Discovered Missing

- a) After each use, the capsules shall be inventoried as they are being returned to their CD V-791 lead container. (There should be a total of six capsules). If for any reason any of the radioactive capsules is discovered missing, the user permit

holder shall search the training area immediately. If all of the radioactive capsules cannot be found and accounted for, the authorized user permit holder shall notify the appropriate IESDA Regional Coordinator immediately following the search. The IESDA Regional Coordinator shall immediately notify the IESDA Radiological Protection Officer.

- b) The authorized user shall secure the remainder of the capsules in the radioactive training source set, pending further instruction from IESDA Radiological Protection Officer.
- c) The IESDA Radiological Protection Officer shall then immediately notify the Nuclear Regulatory Commission and the Illinois Department of Nuclear Safety.

Section 320.410 Handling Radioactive Training Capsules with Missing Radioactive Needles

- a) If a radioactive needle is discovered missing from its capsule, the remaining complete capsules shall be secured in the radioactive training source set container and removed from the general area. The general area shall then be surveyed carefully with the aid of an open shield CD V-700 survey meter until the missing needle is located. Meanwhile, the precautions in Section 320.400 of this Subpart shall be followed. The area shall also be secured against entry by the general public.
- b) If found, the radioactive needle shall be picked up in a method which will enable the individual to keep the radioactive needle intact and away from his person. The empty capsule and other radioactive capsules along with the radioactive needle shall be secured in the radioactive training source set container and marked "unusable".
- c) Upon locating the radioactive needle and placing it in a lead container, the entire area, including personnel and equipment, shall be surveyed with a CD V-700 survey meter (with shield open) to ensure that no radioactive contamination is present. If the area, personnel and equipment are free of contamination, then the area can be returned to normal use.
- d) Immediately after an incident of this type occurs, the radioactive training source set user shall inform the appropriate IESDA Regional Coordinator who shall then notify the IESDA Radiological Protection Officer. The source set shall be placed in storage and kept secure pending disposition instructions.
- e) If the radioactive needle cannot be located the authorized user shall secure the area against unauthorized entry and immediately contact the appropriate IESDA

Regional Coordinator who shall immediately notify IESDA Radiological Protection Officer.

Section 320.420 Replacement of Rings and Tags on Radioactive Training Capsules

- a) All sealed radioactive training capsules will be attended to by the user permit holder whenever they are not in the standard containers and secured under lock and key. The ring and radioactive warning tag on a radioactive training capsule shall not be removed.
- b) If a ring and tag becomes detached from the radioactive capsule for any reason, it shall be replaced in accordance with procedures and regulations for the care, use and control of the CD V-778 Radiation Training Source Set; which is a publication of FEMA dated November 1983. A copy of this FEMA publication is available from IESDA or FEMA at the addresses in Section 320.130.
- c) Replacement of rings and tags on the radioactive capsule shall be the responsibility of the IESDA M & C Shop manager.

Section 320.430 Wipe and Leak Tests

The IESDA Radiological Protection Officer, the IESDA M & C Shop Manager, the IESDA Regional Coordinator and other designated custodians shall be considered qualified users of radioactive training source sets by virtue of their training, position and user permit license. These individuals shall be responsible for conducting inventory and performing leak tests on all radiological training source sets assigned to them (see Exhibit C). Tests shall be conducted during January and July of each year.

- a) All wipes and leak test results shall be sent to the IESDA M & C Shop within five days of completion.
- b) Leak test results shall be reported on RP form 105. Failure of the custodian to send the required wipes and leak test results form shall result in loss of custodianship designation.

Section 320.440 Exposure Records

Dosimeters shall be worn by the training source set user and by the student whenever leak tests are being conducted or whenever radioactive capsules are being used in radiation training.

- a) Exposure record forms shall be available upon request from either the IESDA Regional Coordinator's office or the IESDA M & C Shop Manager.
- b) These exposure record forms shall be maintained by the radiation training source set user and by students training in radiation detection while they are exposed to

the radiological training source set capsules. Copies of exposure records shall be sent to the IESDA M & C Shop Manager in Springfield, IL as soon after leak testing or training as possible.

- c) No individual shall receive more than 100 mr total exposure during any seven consecutive days or more than 5 r total exposure during any calendar year.
- d) Any exposure record indicating that either one of the above limitations to radiation exposure has been exceeded shall be reported immediately to the appropriate IESDA Regional Coordinator who shall then notify the IESDA State Radiological Protection Officer.
- e) Pursuant to 10 CFR 20, Section 20.104, persons under eighteen years of age shall not be permitted to enter any area where radioactive source sets are stored or used.

SUBPART D: POLICY FOR THE DEVELOPMENT AND MAINTENANCE OF A RADIOLOGICAL PROTECTION PROGRAM

Section 320.500 Purpose

This subpart outlines procedures for the development and maintenance of a Radiological Protection Program that is necessary to provide Illinois jurisdictions with the plans, procedures, instrumentation, facilities and trained personnel combined into a complete operational system that can function to minimize the effects of radiation hazards resulting from a peacetime radiological emergency or nuclear attack.

Section 320.510 Policy

- a) The State government in coordination and cooperation with federal and local governments shall develop and execute a radiological protection program designed to monitor, analyze and reduce the radiological hazards following a nuclear attack as well as hazards involved in peacetime radiological emergencies.
- b) A radiological protection program shall be developed by state and local governments that meets the following criteria:
 - 1) Develops and maintains a state radiological protection system.
 - 2) Develops and maintains local government radiological protection systems with inherent capability for nuclear attack and peacetime radiological emergency response.
 - 3) Ensures functional and operational exercises of developed radiological protection systems.

- 4) Provides technical support for statewide training of Radiological Protection Officer, Radiological Response Technicians, and Radiological Monitors.
- 5) Maintains a profile of State and local government radiological protection systems and their capabilities and level of readiness.

Section 320.520 Duties and Responsibilities of Local Government Radiological Personnel

Local Government Radiological Protection Personnel shall be assigned duties and responsibilities consistent with FEMA standards and guidelines of "Objectives for Local Emergency Management (CPG 1-5)", dated July 1984, "Guide for Development of State and Local Emergency Operations Plans (CPG 1-8)", dated October 1985, and "Guide for the Design and Development of a Local Radiological Defense Support System (CPG 1-30)", dated June 1981. These are all FEMA publications. A copy of each of the aforementioned publications is available from IESDA, 110 East Adams Street in Springfield, Illinois, or from FEMA at 500 C Street, Southwest, Washington, D.C.

Section 320.530 Criteria for Trained Radiological Protection Personnel

- a) A cadre of radiological personnel shall be available at local government ESDAs to handle potential radiological emergencies resulting from peacetime incidents or the effects of nuclear weapon detonation. Therefore, local government agencies shall recruit and assign personnel to the following positions after they become adequately trained
 - 1) Radiological Protection Officer
 - 2) Radiological Response Technician
 - 3) The Radiological Monitor
 - 4) Radiological Instructors
- b) Personnel are considered adequately trained and may be assigned to the preceding positions when they have met the following non-resident training requirements as specified in FEMA's "Management Plan for the Radiological Training Series" (TD 100), dated September 1984. This publication is available from IESDA, 110 East Adams Street in Springfield, Illinois, or from FEMA at 500 C Street, Southwest, Washington, DC.

Position

Training Requirement

Radiological Monitor

Fundamentals Course for Radiological

	Monitors (FCRM)
Radiological Response Technician	Fundamentals Course for Radiological Monitors (FCRM) Fundamentals Course for Radiological Response Teams (FCRRT)
Radiological Officers	Fundamentals Course for Radiological Monitors (FCRM) Fundamentals Course for Radiological Response Teams (FCRRT) Fundamentals Course for Radiological Officers (FCRO)
Radiological Monitor Instructor	Fundamentals Course for Radiological Monitors (FCRM) Fundamentals Course for Radiological Response Teams (FCRRT) Radiological Monitor Instructor Course (RMIC)

- c) Local government ESDAs shall be responsible for conducting training for Radiological Monitors. The IESDA shall be responsible for conducting training for local government Radiological Response Technicians, Radiological Protection Officers and Radiological Monitor Instructors.
- d) The IESDA Radiological Protection Officer shall also provide technical support for statewide training of Radiological Officers, Radiological Response Technicians (RRT) and Radiological Monitors. Technical support includes:
- 1) A semi-annual review of radiological protection non-resident course material to assure that it is accurate and current.
 - 2) Observation of radiological protection training classes to determine that course content complies with the requirements of courses listed in Section 320.530(b).
 - 3) Monitoring of class schedules to ensure that an appropriate supply of qualified personnel are being trained to fulfill state needs.
- e) The local government ESDAs shall comply with the policies specified in 29 Ill. Adm. Code 110.30.

Section 320.540 Radiological Annex to the Emergency Preparedness Plan

- a) General Provisions
 - 1) A Radiological Protection Plan shall be prepared as an Annex to the local government's Emergency Preparedness Plan in compliance with 29 Ill. Adm. Code 205.40(a)(1)-(a)(10).
 - 2) The following provisions shall also apply:
 - A) The Radiological Protection Annex shall pertain only to hostile incidents or peacetime accidents involving the release of radioactive contaminants into the environment.
 - B) The IESDA Radiological Protection Officer shall, upon request, assist local government agencies with Emergency Radiological Plan Preparation. Requests for assistance shall be made in writing to the IESDA Radiological Protection Officer in Springfield, IL through the IESDA Regional Coordinator. The IESDA Radiological Protection Officer shall, in agreement with the local government agency, schedule on-site visits to perform technical assistance and plan updates.
 - C) The IESDA Radiological Protection Officer shall also assist local government agencies with scheduling, organizing and conducting exercises consistent with developed radiological protection systems. The local government shall contact the IESDA Radiological Officer through the appropriate IESDA Regional Coordinator at least 30 days prior to the scheduled date of the exercise.

Section 320.550 Radiological Protection Data Base

- a) Local government agencies shall provide data to the IESDA Radiological Protection Officer relative to their radiological protection systems in three major categories in accordance with FEMA letter "Radiological Protection Data Base Instructions for Completing Interim Report RPDB-001" dated November 22, 1985. A copy of this letter is available at the Springfield and Washington addresses cited in Section 320.130.
- b) Local governments shall provide input into the data base by filling in the Radiological Protection Data Base Interim Report RPDB-001 form and sending it to the IESDA Radiological Protection Officer. This form may be obtained from the IESDA Radiological Protection Officer.

- c) These data base reports shall be submitted to the IESDA Radiological Protection Officer quarterly on December 31, March 31, June 30 and September 30. If there has been no change in the data during the quarter, the local government shall so indicate.

Section 320.560 Roster of Trained Radiological Personnel

- a) The IESDA Radiological Officer shall develop and maintain a current roster of all trained Radiological Protection Officers, Radiological Response Technicians and Radiological Monitors within the State to include as a minimum, the date, types of training and their present assignment by title.
- b) Local government agencies shall submit an initial roster of trained personnel to the IESDA Radiological Officer through the IESDA Regional Coordinator. Changes to the roster shall be submitted to the IESDA Radiological Officer accordingly, as they occur.

Section 320.EXHIBIT A Manning and Station Quota Recommendations

It is intended that this data be used as follows:

- To establish some minimum goals that local governments should direct their Radiological Protection planning efforts toward.
- As a guide in which local governments may refer to in their integrated planning efforts. Detailed local information on local government stations may be obtained on request through the IESDA in Springfield, Illinois.

COUNTY	NUMBER	EOC	RPO	RM	E.I.R.S.	SELF-PROTECTION STATIONS	SHELTERS	RADIATION DETECTION KITS
Adams	05-17001-00000	1	2	274	22	44	71	138
Alexander	05-17003-00000	1	2	84	10	20	12	43
Bond	05-17005-00000	1	2	78	7	18	14	40
Boone	05-17007-00000	1	2	82	8	16	17	42
Brown	05-17009-00000	1	2	66	9	18	6	34
Bureau	05-17011-00000	1	2	210	22	44	39	106
Calhoun	05-17013-00000	1	2	60	8	16	6	31
Carroll	05-17015-00000	1	2	122	14	28	19	62
Cass	05-17017-00000	1	2	98	14	28	14	57
Champaign	05-17019-00000	1	2	494	28	56	163	248
Christian	05-17021-00000	1	2	168	16	32	36	85
Clark	05-17023-00000	1	2	122	15	30	16	62
Clay	05-17025-00000	1	2	102	12	24	15	53
Clinton	05-17027-00000	1	2	146	15	30	28	74
Coles	05-17029-00000	1	2	168	12	24	48	85
Cook	05-17031-00000	2	4	11134	25	50	5492	5569
Crawford	05-17033-00000	1	2	94	9	18	20	48
Cumberland	05-17035-00000	1	2	68	8	16	10	35
DeKalb	05-17037-00000	1	2	218	19	36	72	128
DeWitt	05-17039-00000	1	2	118	14	28	17	60
Douglas	05-17041-00000	1	2	92	9	18	19	47

DuPage	05-17043-00000	1	2	1036	9	18	491	519
Edgar	05-17045-00000	1	2	134	15	30	22	68
Edwards	05-17047-00000	1	2	62	8	16	7	32
Effingham	05-17049-00000	1	2	146	16	32	25	74
Fayette	05-17051-00000	1	2	126	14	28	21	64
Ford	05-17053-00000	1	2	104	12	24	16	53
Franklin	05-17055-00000	1	2	148	12	24	38	75
Fulton	05-17057-00000	1	2	222	23	46	42	112
Gallatin	05-17059-00000	1	2	68	9	18	7	35
Greene	05-17061-00000	1	2	112	13	26	17	57
Grundy	05-17063-00000	1	2	138	14	28	27	70
Hamilton	05-17065-00000	1	2	90	12	24	9	46
Hancock	05-17067-00000	1	2	192	24	48	24	97
Hardin	05-17069-00000	1	2	40	5	10	5	21
Henderson	05-17071-00000	1	2	82	11	22	8	42
Henry	05-17073-00000	1	2	250	24	48	53	126
Iroquois	05-17075-00000	1	2	218	25	50	34	110
Jackson	05-17077-00000	1	2	206	16	32	55	104
Jasper	05-17079-00000	1	2	82	10	20	11	42
Jefferson	05-17081-00000	1	2	158	16	32	31	80
Jersey	05-17083-00000	1	2	108	12	24	18	55
JoDaviess	05-17085-00000	1	2	176	22	44	22	89
Johnson	05-17087-00000	1	2	70	9	18	8	36
Kane	05-17089-00000	1	2	592	15	30	251	297
Kankakee	05-17091-00000	1	2	290	16	32	97	146

COUNTY	NUMBER	EOC	RPO	RM	E.I.R.S.	STATIONS	SELF- PROTECTION SHELTERS	RADIATION DETECTION KITS
Kendall	05-17093-00000	1	2	106	9	18	26	54
Knox	05-17095-00000	1	2	242	20	40	61	122
Lake	05-17097-00000	1	2	862	16	32	383	432
LaSalle	05-17099-00000	1	2	444	37	74	111	223
Lawrence	05-17101-00000	1	2	90	9	18	18	46
Lee	05-17103-00000	1	2	208	22	44	38	105
Livingston	05-17105-00000	1	2	262	30	60	41	132
Logan	05-17107-00000	1	2	164	16	32	34	83
McDonough	05-17109-00000	1	2	182	18	36	37	92
McHenry	05-17111-00000	1	2	320	16	32	112	161
McLean	05-17113-00000	1	2	388	30	60	104	195
Macon	05-17115-00000	1	2	346	16	32	125	174
Macoupin	05-17117-00000	1	2	244	26	52	44	123
Madision	05-17119-00000	1	2	646	24	48	251	324
Marion	05-17121-00000	1	2	180	17	34	39	91
Marshall	05-17123-00000	1	2	98	12	13	13	39
Mason	05-17125-00000	1	2	110	13	26	16	56
Massac	05-17125-00000	1	2	82	9	18	14	42
Menard	05-17127-00000	1	2	92	12	24	10	47
Mercer	05-17131-00000	1	2	124	15	30	17	63
Monroe	05-17133-00000	1	2	98	10	20	19	50
Montgomery	05-17135-00000	1	2	174	19	38	30	88
Morgan	05-17137-00000	1	2	174	17	34	36	88
Moultrie	05-17139-00000	1	2	74	8	16	13	38
Ogle	05-17141-00000	1	2	236	25	50	43	119
Peoria	05-17143-00000	1	2	504	19	38	195	253
Perry	05-17145-00000	1	2	88	8	16	20	45
Piatt	05-17147-00000	1	2	80	8	16	16	41
Pike	05-17149-00000	1	2	182	24	48	19	92
Pope	05-17151-00000	1	2	86	13	26	4	44
Pulaski	05-17153-00000	1	2	84	11	22	9	43
Putnam	05-17155-00000	1	2	34	4	8	5	18
Randolph	05-17157-00000	1	2	188	21	42	31	95

Richland	05-17159-00000	1	2	88	9	18	17	45
Rock Island	05-17161-00000	1	2	442	18	36	167	222
St. Clair	05-17163-00000	1	2	684	19	38	285	343
Saline	05-17165-00000	1	2	124	12	24	26	63
Sangamon	05-17167-00000	1	2	478	26	52	161	240
Schuyler	05-17169-00000	1	2	94	13	26	8	48
Scott	05-17171-00000	1	2	102	15	30	6	52
Shelby	05-17173-00000	1	2	190	24	48	23	96
Stark	05-17175-00000	1	2	64	8	16	8	33
Stephenson	05-17177-00000	1	2	200	17	34	49	101
Tazewell	05-17179-00000	1	2	352	19	38	119	177
Union	05-17181-00000	1	2	116	14	28	16	59
Vermilion	05-17183-00000	1	2	308	19	38	97	155
Wabash	05-17185-00000	1	2	78	8	16	15	40
Warren	05-17187-00000	1	2	134	15	30	22	68
Washington	05-17189-00000	1	2	118	15	30	14	60
Wayne	05-17191-00000	1	2	148	19	38	17	75
White	05-17193-00000	1	2	94	10	20	17	48
Whiteside	05-17195-00000	1	2	252	21	42	63	127
Will	05-17197-00000	1	2	642	24	48	249	322
Williamson	05-17199-00000	1	2	170	12	24	49	86
Winnebago	05-17201-00000	1	2	578	14	28	247	290
Woodford	05-17203-00000	1	2	152	16	32	28	77
STATEWIDE TOTAL		102	204	31,648	1,579	3,160	11,110	15,942

Section 320.EXHIBIT B Radiation Detection Equipment

A) Operational

1) Types of radiation detection kits for operations:

- a) The radiation detection kit (CD V-777-1) is the basic operation kit. It consists of the following items in the quantities indicated:

- (1) CD V-715 Survey Meter (0-500 r/hr)
- (1) CD V-700 Survey Meter (0-50 mr/hr)
- (1) CD V-750 dosimeter charger
- (6) CD V-742 dosimeter (0-200 r)
- (6) Batteries
- (6) Exposure Record Forms

- b) The items and corresponding quantities of instruments within the CD V-777-2 kits are included are listed as follows:

- (1) CD V-717 Survey Meter (0-500 r)
- (1) CD V-750 dosimeter charger
- (6) CD V-742 dosimeter (0-200 r)
- (2) batteries
- (6) Exposure Record forms

B) Training

- 1) The radiation detection training kit (CD V-777-T) consists of the following items and amounts:
 - (1) CD V-715 Survey meter (0-500 r/hr)
 - (1) CD V-700 Survey meter (0-50 mr/hr)
 - (1) CD V-750 dosimeter charger
 - (1) CD V-138 dosimeter (0-200 mr)
 - (1) CD V-742 dosimeter (0-200 r)
 - (6) Batteries
 - (2) Exposure record forms
- 2) The training source set (CD V-778) consists of the following items and amounts:
 - (6) CD V-784 radioactive source capsules
 - (1) CD V-792 large lead container
 - (1) CD V-791 small lead container
 - (1) CD V-788 long-handled tongs
 - (2) locks for large lead container
 - (1) key for locks
 - (6) Danger Radiation Area Signs
 - (2) Caution Radiation Area Signs

Section 320.EXHIBIT C Leak Testing Procedures

1. Equipment Used
 - a. Long nosed pliers
 - b. Long handled tongs

- c. CD V-700 Survey Meter
 - d. CD V-138 Dosimeter, to be worn by individual while performing the test.
 - e. Key for two locks on large lead pig.
 - f. One roll of paper towels
 - g. Filter paper and cotton swabs (supplied by IESDA)
 - h. Methanol technical, wood alcohol (supplied by IESDA)
2. Check to see that the large pig has two radioactive yellow II shipping labels and has the following information: contents, (CS137), number of curies (.120) and transport index (mR/Hr reading at three feet).
 3. Unlock large pig and check to see that each lead pig bears a label including the following information: radioisotope, number of sealed sources, total activity of the sources and the date of encapsulation.
 4. Turn on the CD V-700 Survey Meter, X1 scale, 20 feet from large pig and let it warm up.
 5. Remove small pig from large pig, set on table 20 feet from large pig and the CD V-700 Survey Meter.
 6. Moisten filter paper with methanol and wipe inside of large pig.
 7. Using the CD V-700 Survey Meter with the shield open, the earphone attached, the range switch set at the scale (X1) and the window as close as possible to, but not in contact, with the filter paper; thoroughly monitor the filter paper. Any average reading of the CD V-700 twice above normal background must be attributed to leakage and/or contamination.
 8. If the wipe test on the large pig shows no evidence of contamination, continue the leak test by covering the work area with several thicknesses of paper towel. Using the tong or pliers, remove one of the sealed sources from the small pig and wipe it with moistened cotton swab. Sufficient pressure should be applied to effect a thorough removal of any contamination. Place the source in the large pig.
 9. As the test for each capsule is completed, place that capsule in the large pig until all capsules have been tested.
 10. After leak testing each source, wipe test the small pig in the same manner as the large one.

11. If the leak test results are negative, return all sources to the small pig and return the set to its normal storage location.
12. Wipes and cotton swabs of all tests shall be placed in individual plastic bags, and mailed to the IESDA M & C Shop for more accurate measurement of the contamination.
13. Collect the paper used to cover the test area, and any other waste material that has accumulated, and dispose of it in a normal trash if it is not contaminated. If it is contaminated, place in a plastic bag. Contact the appropriate IESDA Regional Coordinator who shall contact the IESDA M & C Shop Manager. The IESDA M & C Shop Manager shall arrange to pick up the contaminated items for proper disposal.
14. Monitor the area, hands and equipment, at the conclusion of the test.
15. Record your wipe test results. The average CD V-700 will give a reading of 15 cpm over background for .005 microcuries.
16. Replacement of rings and tags will be done by the IESDA M & C Shop personnel only.