MONITORING EMPLOYEE EXPOSURE TO OCCUPATIONAL RADIATION

I. PURPOSE
This directive provides instructions to inspection employees for obtaining and using personnel radiation dosimeters (also called film badges). Inspection personnel wear film badges when working with radioactive materials or radiation-emanating equipment (i.e., an x-ray inspection area or irradiation facility).

II. (RESERVED)

III. REASON FOR ISSUANCE
A. Emerging technologies within the meat and poultry industry are making widespread use of radiation equipment. Film badges:
   1. Measure the amount of exposure to radiation.
   2. Are required equipment when electromagnetic x-ray or gamma radiation equipment is routinely used in an establishment. Inspection employees should wear film badges while performing inspection related activities.
B. USDA’s Radiological Safety Staff coordinates radiological safety within USDA. RSS furnishes guidance and coordinates supplies of film badges to all USDA agencies. A private contractor, under RSS guidance, supplies film badges to USDA agencies.

IV. REFERENCES
FSIS Directive 7310.4, Foreign Particle Contamination of Meat and Poultry Products
FSIS Directive 11,220.1, Accepted Meat and Poultry Equipment
9 CFR 381.149, Irradiation of Poultry Product to Control Foodborne Pathogen
10 CFR Part 20, Standards for Protection Against Radiation
29 CFR Part 1910.96, Ionizing Radiation
USDA, Agricultural Research Service, RSS Use Conditions for Personnel Dosimetry, Publication 4, January 1994
V. FORMS AND ABBREVIATIONS

ALARA As Low As Reasonably Achievable
IO Inspection Operations
IOSHM IO Safety and Health Manager
OSHA Occupational Safety and Health Administration
NRC Nuclear Regulatory
PESB Program Evaluation and Safety
RSS Radiological Safety Staff, Office of Personnel, USDA
SOHM Safety and Occupational Health Manager
WSHO Workplace Safety and Health Official

Form RSS-71 Visitor/ Spare Badge Assignment Report

VI. DEFINITIONS

A. **Assigned Packet.** The film packet an assigned inspector receives on an ongoing monthly basis from the contractor.

B. **Badge/Participant Number.** A number to identify employees in the film badge services. (See Attachment 1.)

C. **Consignee.** The contact person for a dosimetry series who receives and exchanges the film packets on a monthly basis.

D. **Control Dosimeter.** An instrument that measures background radiation doses to shipments of packets during transit.

E. **Dosimeter.** An instrument that measures exposure to a physical hazard such as radiation.

F. **Film Badge.** A holder with a film packet insert that measures whole body exposure to radiation.

G. **Film Packet.** A radiation monitoring packet that contains photographic film housed in a paper jacket.

H. **Irradiator.** A facility using radioactive material or a machine that emits radiation as a form of radiant energy to treat a food substance.

I. **Millirem.** A measure of the dose of ionizing radiation to body tissue in terms of its estimated biological effect. One millirem equals 0.001 rem.

J. **Occupational Dose.** The exposure to ionizing radiation an employee receives in the course of employment. This exposure does not include radiation for medical diagnosis or medical therapy.
K. **Radiation.** Includes any or all of the following: Alpha, beta, gamma, or X-rays; neutrons; high-speed electrons; high-speed protons; and other atomic particles. Does not include sound or radio waves, or visible, infrared, or ultraviolet light.

L. **Radioactive Material.** Any material which emits, by spontaneous nuclear disintegration, corpuscular or electromagnetic emanations.

M. **Series Number.** The computer access number for a packet or a group of packets sent to a specific address. (EXAMPLE: A02.)

N. **Visitor Packet.** The film packet an inspector receives for temporary use from the regional office or PESB.

**VII. RESPONSIBILITIES**

A. **PESB.**

1. Serves as the liaison to RSS.

2. Maintains a supply of visitor badges.

3. Determines corrective action for over-exposure cases.

4. Maintains records of employee exposure and corrective action required.

B. **Regional Processing Staff.**

1. Gives the WSHO information to initiate badge service.

2. Alerts the WSHO to cancel assigned service when it is not needed for 3 or more months.

C. **Workplace Safety and Health Official.** Individuals within the Agency’s organizational components who manage internal occupational safety and health programs (EXAMPLES: Regional Program Specialist or Laboratory Staff Officer).

1. Serves as liaison to PESB

2. Maintains a supply of visitor packets and holders.

3. Maintains a record of visitor badges issued.

4. Distributes visitor badges to inspection personnel monthly.

5. Receives visitor packets from inspectors and returns to RSS contractor.
D. Inspection Personnel.

1. Assigned Service.
   a. Wears the film badge with his or her pre-printed name.
   b. Returns the old film packet for analysis to RSS contractor when the new packet is received.
   c. Notifies WSHO immediately if the new packet is not received by the first of the month.
   d. Notifies Regional Processing Staff if service is no longer needed.
   e. Returns holder and film packets to the RSS contractor when service is no longer needed.

2. Visitor Service.
   a. Wears the film badge with his or her handwritten name.
   b. Returns the old film packet for analysis to the WSHO when the new packet is received.
   c. Returns holder and film packets to the WSHO when service is no longer needed.

VIII. Film Badge Services

All inspection personnel assigned to an establishment that routinely uses radioactive or radiation-emanating equipment shall receive a film badge. The RSS contractor furnishes film badge materials to all FSIS locations. Inspectors working in areas containing ultraviolet lamps should follow the procedures in FSIS Directive 11,220.1.

A. Two types of film badge services are available:

1. Assigned Service. This service is available for establishments that routinely use radiation equipment or materials as part of the normal operating procedures. (NOTE: Assigned service is available for establishments with an approved Partial Quality Control Program Foreign Particle Detection 670.)
2. **Visitor Service.** This service is available for establishments that do **not** routinely use radiation equipment or materials as part of the normal operating procedures. *(EXAMPLE: An establishment that uses radiation equipment only during unique situations, such as when leasing x-ray equipment to reinspect meat and poultry products suspected of being contaminated.)*

   B. Plant management may offer or require FSIS employees to wear dosimeter badges supplied by the plant. The plant's procedure does not supersede or become a substitute for the Agency badge services.

**IX. OBTAINING FILM BADGES**

A. **Initiating or Changing Badge Service.**

1. **Regional Processing Staff.**

   a. Sends a request for new service or change in existing service to the WSHO. *(NOTE: Do not send requests directly to the contractor.)* The Staff should cancel assigned service when it is not needed for 3 or more months.Canceled service can be restored on request to PESB through the WSHO. Allow 2 weeks for PESB to restore canceled service.

   b. Gives the WSHO the following information:

      (1) Nature of the request such as change in address, start new service, add or delete an employee from the service, or correct other information.

      (2) Consignee name.

      (3) Employee (s) full name

      (4) Social security number (s)

      (5) Birthdate (s)

      (6) Occupation (s)

      (7) Address where to ship badges.

      (8) A statement indicating if employee (s) has or had a prior film badge for this or another USDA location. If employee (s) has prior assignments, provide Series Number (s).
2. **WSHO.**
   a. Supplies visitor packets and holders to inspectors.
   b. Notifies PESB of the need for assigned badge service, changes in existing service, or changes in visitor badge service.

3. **PESB.**
   a. Serves as the contact between the Agency and RSS. Forwards request to RSS for changes to the distribution of assigned or visitor badges (allow at least 3 weeks).
   b. Maintains visitor badges to supplement regional supplies. PESB's visitor badges may be used by relief inspectors and inspection personnel waiting for assigned badge service.

4. **RSS** arranges for the contractor to furnish all film badge materials directly to FSIS locations for use or distribution.

B. **Assigned Service Procedures.**

1. **Regional Processing Staff** sends the WSHO a request for assigned service and requests a badge for each inspector including relief inspectors who works with radioactive materials or radiation-emanating equipment.

2. **Consignee** receives a monthly shipment of film packets for use beginning with the first day of the next month. A shipment includes a packet for each assigned employee (preprinted with the employee name) and relief inspector, and one control packet.

3. **Inspector** returns the used film packet to the contractor for analysis after receiving a new film packet for the next month. Retains the film holder for use with the new packet. Notifies the WSHO if new packets are not received by the first of the month.

C. **Visitor Service Procedures.**

1. **Regional Processing Staff** sends the WSHO a request for visitor service when the Regional Office receives a reinspection request. The Staff gives the WSHO the required information (see Subparagraph A. 1. b.) before final approval of reinspection procedures.
2. **WSHO:**

   a. Receives a monthly shipment of visitor and control packets.

   b. Distributes one control packet with each shipment including a visitor packet and holder for each inspector identified in the request for visitor service.

   c. Retains one monthly control packet.

   d. Hand writes the name of the inspector on the visitor packet with a soft point pen.

   e. Completes Form RSS-71, and mails or sends a facsimile copy to RSS before returning the used and unused packets to the contractor. (See Attachment 2.) Maintains a copy of Form RSS-71 in the regional office.

   f. Returns all monthly visitor packets to the contractor, accounting for used and unused visitor packets. Prepares separate shipments for return of visitor packets and the control packet to the contractor. The separate shipments permit monitoring of each control packet for background radiation exposure during storage and transit.

3. **Inspector** returns the badge (holder with film packet) and control packet to the WSHO when use of radiation emanating equipment or materials has ended.

**X. PLACEMENT OF BADGE ON CLOTHING**

An inspector:

A. Wears the badge (holder with film packet) on clothing located between the neck and waist.

B. Does not share a film badge with another employee. The badge should be worn only by the employee whose name appears on the film packet.

**XI. HANDLING CONTROL PACKETS**

Store control packets in a nonradiation area. The control packets track background radiation doses during transit. Do not wear the packets on clothing. Return control packets with film badge(s) as follows:

A. **Assigned Badge Service.** The inspector returns the monthly control packet with the film packets to the contractor.

   B. **Visitor Badge Service.** The inspector returns the monthly control packet with the film packets to the WSHO.
XII. **DOSIMETRY REPORTS**

A. Each month the RSS and consignee receive a dosimetry report from the contractor. If an employee’s film dosimeter reading exceeds the ALARA limit of 100 millirems for the month, RSS notifies the consignee and the SOHM. A report is prepared and submitted to explain the possible reasons for the high exposure and the corrective actions taken to reduce future exposures. The SOHM provides over-exposure reports to the IOSHM for notifying the WSHO.

B. The inspector may continue to work around equipment or materials unless exposure approaches the OSHA and NRC limits of 5,000 millirems per year or 1,250 millirems per quarter. If this occurs, the WSHO, IOSHM, SOHM, and RSS decide the corrective actions to avoid reoccurrences.

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**ATTACHMENTS**

1. Sample of Film Packet
2. Form RSS-72, Visitor/ Spare Badge Assignment Report
SAMPLE OF FILM PACKET

1. Denotes the shipping frequency (EXAMPLE: weekly or monthly).
2. Indicates the beginning wear date.
3. Participant name or visitor number.
4. Account number is a series of five-digits.
5. Badge (participant) number is a five-digit number on the third line of the film packet. This number identifies each employee in the film badge service.
6. Series number is a two-digit number preceded by a letter.
7. Binary number is a series of seven-digit numbers followed by a letter. This number is on the last line of the film packet.
United States Department of Agriculture
Visitor/Spare Badge Assignment Report (RSS-71)

A visitor badge shall be used only by an individual who needs a badge but does not have one permanently assigned; or who needs a badge for less than one month. When a visitor badge is issued, this report must be mailed or faxed to the Radiological Safety Staff before the badge is returned to the contractor. The address is: USDA/OPP/RIMD/RSS 4700 River Rd, Unit 91, Riverdale, MD, 20737; FAX: (301) 734-9050.

Series number: A95
Consignee address: John Doe
USDA, FSIS, - - - -
123 Reactor Lane
Nulite, Alaska 99910

☐ Check, if address is new.

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