

**DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS
RADIATION SAFETY SECTION
IONIZING RADIATION RULES**

DETAILED TABLE OF CONTENTS

PART 5. STANDARDS FOR PROTECTION AGAINST RADIATION		Page
R 325.5201.	Purpose and scope.....	5-1
R 325.5202.	Intentional exposure of humans.....	5-1
PERMISSIBLE DOSE, LEVELS AND CONCENTRATIONS		
R 325.5203.	Exposure of individuals to radiation.....	5-1
R 325.5205.	Dose limits.....	5-2
R 325.5206.	Determination of accumulated dose.....	5-2
R 325.5210.	Exposure of minors.....	5-2
R 325.5211.	Radiation levels from external sources in unrestricted areas.....	5-3
NOTICES, INSTRUCTIONS AND REPORTS TO WORKERS; INSPECTIONS		
R 325.5213.	General Information.....	5-3
R 325.5214.	Posting of notices to workers.....	5-3
R 325.5215.	Instructions to workers.....	5-3
R 325.5216.	Notifications and reports to individuals.....	5-4
R 325.5217.	Presence of representatives of licensees or registrants and workers during investigations.....	5-4
R 325.5218.	Consultation with workers during investigations.....	5-5
R 325.5219.	Requests by workers for investigations.....	5-5
R 325.5220.	Investigation not warranted; informal review.....	5-5
PRECAUTIONARY PROCEDURES		
R 325.5221.	Surveys.....	5-6
R 325.5222.	Personnel monitoring.....	5-6
R 325.5224.	Caution signs, labels, and signals.....	5-6
R 325.5225.	Radiation area signs.....	5-7
R 325.5226.	High radiation area signs.....	5-7
R 325.5227.	Controls for access to high radiation areas.....	5-7
R 325.5231.	Alternate wording for warning signs.....	5-7
R 325.5232.	Radiation machine labels.....	5-7
R 325.5233.	Exemptions from posting and labeling requirements.....	5-7
R 325.5241.	Use of safety equipment.....	5-8
RECORDS, REPORTS AND NOTIFICATIONS		
R 325.5245.	Records of surveys, radiation monitoring, disposal and tests.....	5-8
R 325.5246.	Reports of theft or loss of sources of radiation.....	5-8
R 325.5247.	Notification of incidents.....	5-8
R 325.5250.	Reports of overdose and excessive levels and concentrations.....	5-9

PART 5. STANDARDS FOR PROTECTION AGAINST RADIATION

R 325.5201. Purpose and scope.

Rule 201. (1) This part establishes standards for protection against radiation hazards. Except as otherwise specifically provided, this part applies to all licensees and registrants.

(2) In addition to complying with requirements set forth in this part, every reasonable effort should be made to maintain radiation levels in unrestricted areas and releases of radioactive materials in effluents to unrestricted areas, as far below the limits specified in this part as practicable. The term "as far below the limits specified in this part as practicable" means as low as is practicably achievable taking into account the state of technology, and the economics of improvements in relation to benefits to the public health and safety and in relation to the utilization of sources of radiation in the public interest.

[*Note: The requirements of this rule that pertain to radiation machine registration, licensing, or compliance are under the purview of the Michigan Department of Licensing and Regulatory Affairs.*]

R 325.5202. Intentional exposure of humans.

Rule 202. (1) Nothing in these rules shall be construed as limiting the intentional exposure of patients to radiation for the purpose of medical diagnosis, medical therapy or medical research conducted by licensed members of the healing arts.

(2) Intentional exposure of individuals to radiation or concentrations of radioactive material for diagnostic or therapeutic purposes shall be limited to supervision or prescriptions by licensed members of the healing arts.

(3) Nothing in these rules shall be construed as authorization to conduct medical diagnosis, medical therapy or medical research which is not fully consistent with the standards of practice for licensed members of the healing arts.

[*Note: The requirements of this rule that pertain to radiation machine registration, licensing, or compliance are under the purview of the Michigan Department of Licensing and Regulatory Affairs.*]

PERMISSIBLE DOSES, LEVELS AND CONCENTRATIONS

R 325.5203. Exposure of individuals to radiation.

Rule 203. (1) Except as provided in subrules (3), (4) and (6) a licensee or registrant shall not receive, possess, use or transfer sources of radiation in such a manner as to cause any individual to receive in any period from all sources of radiation in the licensee's or registrant's possession a dose in excess of the limits specified in table 1 of rule 205. A licensee or registrant shall not be held liable for meeting the dose limit for fertile

women (with respect to fetus) listed in table 1 until and unless the employee has submitted written notice to the licensee or registrant of the pregnant condition. Potential risk of exposure if any, to the fetus before the written notice is received shall be assumed by the employee as a condition of employment as a radiation worker. Following receipt of written notice, the employee's dosimeter record shall be reviewed immediately and necessary steps shall be taken to meet the dose limit specified in table 1 of rule 205.

(2) For determining the doses specified in rules 203 to 215, a dose from x- or gamma rays up to 10 MeV may be assumed to be equivalent to the exposure measured by a properly calibrated appropriate instrument in air at or near the body surface of the region of the highest exposure rate.

(3) A licensee or registrant may permit an individual in a restricted area to receive a dose to the whole body greater than that permitted in subrule (1) if:

- (a) The annual dose does not exceed 5 rems in any 1 year and during any calendar quarter the dose to the whole body from sources of radiation in the licensee's or registrant's possession does not exceed 3 rems.
- (b) The dose to the whole body, when added to the accumulated occupational dose to the whole body, does not exceed 5 (N-18) rems where "N" equals the individual's age in years at his last birthday.
- (c) The licensee or registrant has determined the individual's accumulated occupational dose to the whole body on Form RH-101, or on a clear and legible record containing all the information required in that form and has otherwise complied with the requirements of rule 206.

(4) Upon application showing an operational need, the department may authorize radiation doses at a higher annual level than the limits set forth in subrule (1) provided that the dose does not exceed 3 rems per quarter and that, based on the determination of the individual's prior radiation record, his accumulated occupational dose does not exceed 5 (N-18) rems where "N" equals the individual's age in years at his last birthday.

(5) As used in this part "dose to the whole body" includes any dose to the whole body, gonads, active blood-forming organs, head and trunk, or lens of the eye.

(6) Nothing in this part shall be interpreted as limiting the exposure of members of emergency response teams to radiation under emergency circumstances for the purpose of minimizing danger to life or property. Such teams may include police, fire, ambulance and paramedical crews acting in the course of their assigned duties.

[*Note: As a result of Executive Order 2011-4, the authority, powers, duties, functions, and responsibilities of the radiation machine registration, licensing, and compliance program were*

transferred to the Michigan Department of Licensing and Regulatory Affairs. The Department of Licensing and Regulatory Affairs has renamed Form RH-101 to BHS/HFS-101.]

R 325.5205. Dose limits.

Rule 205.

TABLE 1

Maximum Permissible Dose Equivalent for Occupational Exposure	
Dose to the whole body*	1.25 rem per quarter
Skin of whole body	7.5 rems per quarter
Hands	18.75 rems per quarter
Fertile women (with respect to fetus).....	0.5 rem in gestation period
Maximum Permissible Dose Equivalent for Non-Occupational Exposure	
Individual.....	0.5 rem in any one year
Population Dose Limits	
Genetic.....	0.17 rem average per year
Somatic	0.17 rem average per year

*If the dose distribution is not uniform the limiting dose shall be the highest dose received by any of the critical organs specified in subrule (5) of rule 203.

R 325.5206. Determination of accumulated dose.

Rule 206. (1) This rule contains requirements which shall be satisfied by licensees or registrants who propose, pursuant to rules 203 (3) or (4), to permit individuals in a restricted area to receive radiation doses in excess of the limits specified in table 1 of rule 205.

(2) Before permitting an individual in a restricted area to be exposed to radiation in excess of the limits specified in table 1 of rule 205, each licensee or registrant shall:

- (a)** Obtain a certificate on Form RH-101, or on a clear and legible record containing all the information required in that form, signed by the individual, showing each period of time after the individual attained the age of 18 in which the individual received an occupational dose of radiation.
- (b)** Calculate on Form RH-101, in accordance with the instructions appearing therein, or on a clear and legible record containing all the information required in that form, the previously accumulated occupational dose received by the individual and the additional dose allowed for the individual under rules 203 (3) or (4).

(3) In the preparation of Form RH-101, or on a clear and legible record containing all the information required in that form, the licensee or registrant shall make a reasonable effort to obtain reports of the individual's previously accumulated

occupational dose. For each period for which the licensee or registrant obtains these reports, he shall use the dose shown in the report in preparing the form. Where a licensee or registrant is unable to obtain reports of the individual's occupational dose for a previous complete calendar quarter, it shall be assumed that the individual has received the occupational dose specified in whichever of the following columns apply:

Part of Body	<u>COLUMN 1</u>	<u>COLUMN 2</u>
	Assumed Dose in Rems for Calendar Quarters Before January 1, 1961	Assumed Dose in Rems For Calendar Quarters Beginning on or After January 1, 1961
Whole body, gonads, active blood-forming organs, head and trunk, lens of the eye	3.75	1.25

(4) The licensee or registrant shall retain and preserve records used in preparing Form RH-101. If calculation of the individual's accumulated occupational dose for all periods before January 1, 1961, yields a result higher than the applicable accumulated dose value for the individual as of that date, as specified in rule 205, the excess may be disregarded.

[Note: As a result of Executive Order 2011-4, the authority, powers, duties, functions, and responsibilities of the radiation machine registration, licensing, and compliance program were transferred to the Michigan Department of Licensing and Regulatory Affairs. The Department of Licensing and Regulatory Affairs has renamed Form RH-101 to BHS/HFS-101.]

R 325.5210. Exposure of minors.

Rule 210. (1) A licensee or registrant shall not receive, acquire, possess, use or transfer sources of radiation in such a manner as to cause an individual who is under 18 years of age, to receive in any period of 1 calendar quarter from all sources of radiation in the licensee's or registrant's possession a dose in excess of 10% of the quarterly occupational limit specified in rule 205 (e.g. 125 mrems whole body).

(2) A licensee shall not receive, acquire, possess, use or transfer radioactive material in such a manner as to cause any individual in a restricted area, who is under 18 years of age, to be exposed to airborne radioactive material in an average concentration in excess of the limits specified in table II of appendix A in rules 261 to 270. For purposes of this subrule, concentrations may be averaged over periods not greater than 1 week (7 consecutive days).

(3) Rule 208 (1) shall apply where an individual is exposed subject to subrule (2).

[Note: The requirements of this rule that pertain to radiation machine registration, licensing, or compliance are under the purview of the Michigan Department of Licensing and Regulatory Affairs.]

R 325.5211. Radiation levels from external sources in unrestricted areas.

Rule 211. (1) Except as authorized by the department pursuant to subrule (2), a licensee or registrant shall not receive, acquire, possess, use or transfer sources of radiation in such a manner as to result in an individual in an unrestricted area receiving a dose in excess of:

- (a) Two millirems in any 1 hour.
- (b) One hundred millirems in any 7 consecutive days.
- (c) Five hundred millirems in any 1 year.

(2) A person may apply to the department for proposed limits upon levels of radiation in unrestricted areas in excess of those specified in subrule (1) resulting from the applicants possession or use of sources of radiation. The application shall include information as to anticipated average radiation levels and anticipated occupancy times for each unrestricted area involved. The department shall approve the proposed limits if the applicant demonstrates to the satisfaction of the department that the proposed limits are not likely to cause any individual to receive a dose to the whole body in any period of 1 calendar year in excess of 0.5 rem.

NOTICES, INSTRUCTIONS, AND REPORTS TO WORKERS; INSPECTIONS

R 325.5213. General Information.

Rule 213. Rule 214 to 220:

- (a) Establish requirements for notices, instructions and reports by licensees or registrants to individuals engaged in work under a license or registration.
- (b) Explain options available to such individuals in connection with department investigations of licensees or registrants to ascertain compliance with the provisions of the act, these rules or orders, licenses or registration certificates issued thereunder regarding radiological working conditions. Department investigations include investigations of complaints and routine inspections or compliance investigations.
- (c) Apply to all persons who own, receive, acquire, possess, use or transfer sources licensed by or registered with the department pursuant to parts 2 and 4.

R 325.5214. Posting of notices to workers.

Rule 214. (1) A licensee or registrant shall post current copies of the following documents:

- (a) The regulations in this part.
- (b) The license, certificate of registration and conditions or documents incorporated by reference and amendments thereto.
- (c) The operating procedures applicable to work under the license or registration.
- (d) Any notice of violation involving radiological working conditions, proposed imposition of civil

penalty, or order issued pursuant to part 1 and any response from the licensee or registrant.

(2) If posting of a document specified in subrule (1)(a), (b) or (c) is not practicable, the licensee or registrant may post a notice which describes the document and states where it may be examined.

(3) Form RH-100 "Notice to Employees" shall be posted by each licensee or registrant wherever individuals work in or frequent any portion of a restricted area. Copies of Form RH-100 may be obtained by writing to the Michigan Department of Public Health, Division of Radiological Health, 3500 North Logan Street, Lansing, Michigan 48914.

(4) Documents, notices or forms posted pursuant to this rule shall appear in a sufficient number of places to permit individuals engaged in work under the license or registration to observe them on the way to or from any particular work location to which the document applies, shall be conspicuous, and shall be replaced if defaced or altered.

(5) Department documents posted pursuant to subrule 1(d) shall be posted within 2 working days after receipt of the documents from the department. The licensee's or registrant's response, if any, shall be posted within 2 working days after dispatch from the licensee or registrant. The documents shall remain posted for a minimum of 5 working days or until action correcting the violation has been completed, whichever is later.

[Note: As a result of Executive Order 2011-4, the authority, powers, duties, functions, and responsibilities of the radiation machine registration, licensing, and compliance program were transferred to the Michigan Department of Licensing and Regulatory Affairs. The Department of Licensing and Regulatory Affairs has renamed Form RH-100 to BHS/HFS-100. Any correspondence to the Michigan Department of Public Health should now be addressed to the Michigan Department of Licensing and Regulatory Affairs, BHS, Radiation Safety Section, P.O. Box 30664, Lansing, Michigan 48909.]

R 325.5215. Instructions to workers.

Rule 215. (1) A licensee or registrant shall:

- (a) Inform individuals working in or frequenting any portion of a restricted area of the occurrence of radiation or sources of radiation in those portions of the restricted area.
- (b) Instruct these workers in the following:
 - (i) The health protection problems associated with exposure to the sources of radiation and in precautions or procedures to minimize exposure.
 - (ii) The purposes and functions of protective devices employed.
 - (iii) Appropriate responses to warnings made in the event of any unusual occurrence or malfunction that may involve exposure to radiation or radioactive material.
- (c) Instruct these workers to observe, to the extent within the workers' control, the applicable

provisions of department rules and license or registration conditions for the protection of personnel from exposures to radiation or radioactive material.

- (d) Advise these workers of reports of radiation dose which they may request pursuant to rule 216.
- (e) Inform these workers of their responsibility to report promptly to the licensee or registrant any condition which may lead to or cause:
 - (i) A violation of department rules, licenses or registration certificates.
 - (ii) Unnecessary exposure to radiation or radioactive material.

(2) The extent of instructions required by this rule shall be commensurate with potential radiological health protection problems in the restricted area.

[*Note: The requirements of this rule that pertain to radiation machine registration, licensing, or compliance are under the purview of the Michigan Department of Licensing and Regulatory Affairs.*]

R 325.5216. Notifications and reports to individuals.

Rule 216. (1) Radiation exposure data for an individual and the results of any measurements, analyses, and calculations of radioactive material deposited or retained in the body of an individual shall be reported to the individual as specified in this rule. The information reported shall include data and results obtained pursuant to department rules or orders, or license or registration conditions, as shown in records maintained by the licensee or registrant pursuant to department rules. Each notification and report shall:

- (a) Be in writing.
- (b) Include appropriate identifying data such as the name of the licensee or registrant, the name of the individual, and the individual's social security number.
- (c) Include the individual's exposure information.
- (d) Contain the following statement:

"This report is furnished to you under the provisions of part 5 of the Michigan Department of Public Health rules entitled 'Standards for Protection Against Radiation'. You should preserve this report for future reference."

(2) At the request of any worker, employed by or associated with him, a licensee or registrant shall advise the worker annually of the worker's exposure to radiation or radioactive material as shown in records maintained by the licensee or registrant pursuant to rule 245.

(3) At the request of a worker formerly engaged in work controlled by the licensee or the registrant, a licensee or registrant shall furnish to the worker a report of the worker's exposure to radiation or radioactive material. The report shall:

- (a) Be furnished within 30 days from the time the request is made, or within 30 days after the exposure of the individual has been determined by the licensee or registrant, whichever is later.

- (b) Cover, within the period of time specified in the request, each calendar quarter in which the worker's activities involved exposure to radiation from radioactive material licensed by, or radiation machines registered with the department.

- (c) Include the dates and locations of work under the license or registration certificate in which the worker participated during this period.

(4) When a licensee or registrant is required pursuant to rule 250 to report to the department any exposure of an individual to radiation or radioactive material, the licensee or the registrant shall also provide the individual a report on his exposure data included therein. Such reports shall be transmitted at a time not later than the transmittal to the department.

[*Note: The requirements of this rule that pertain to radiation machine registration, licensing, or compliance are under the purview of the Michigan Department of Licensing and Regulatory Affairs.*]

[*Note: As a result of Executive Order 2011-4, the authority, powers, duties, functions, and responsibilities of the radiation machine registration, licensing, and compliance program were transferred to the Michigan Department of Licensing and Regulatory Affairs. With respect to machine sources of ionizing radiation, any reference in these rules to the Michigan Department of Public Health should now reference the Michigan Department of Licensing and Regulatory Affairs.*]

R 325.5217. Presence of representatives of licensees or registrants and workers during investigations.

Rule 217. (1) A licensee or registrant shall afford opportunity to a department representative, at all reasonable times, to inspect or investigate materials, machines, activities, facilities, premises, and records pursuant to these rules.

(2) A licensee or registrant or his authorized representative may accompany a department representative during all phases of an investigation except during consultation with workers as specified in rule 218.

(3) If, at the time of investigation, an individual has been authorized by the workers to represent them during department investigations, the licensee or registrant shall notify the department representative of such authorization and shall give the workers' representative an opportunity to accompany the department representative during the investigation of physical working conditions.

(4) Each workers' representative shall be routinely engaged in work under control of the licensee or registrant and shall have received instructions as specified in rule 215.

(5) Different representatives of licensees or registrants and workers may accompany the department representative during different phases of an investigation if there is no resulting interference with the conduct of the investigation. However,

only 1 workers' representative at a time may accompany the department representative.

(6) With the approval of the licensee or registrant and the workers' representative an individual who is not routinely engaged in work under control of the licensee or registrant, e.g. a consultant to the licensee or registrant or to the workers' representative, shall be afforded the opportunity to accompany the department representative during the investigation of physical working conditions.

(7) Notwithstanding the other provisions of this rule, a department representative may refuse to permit accompaniment by any individual who deliberately interferes with a fair and orderly investigation. With regard to any area containing proprietary information, the workers' representative for that area shall be an individual previously authorized by the licensee or registrant to enter that area.

R 325.5218. Consultation with workers during investigations.

Rule 218. (1) A department representative may consult privately with workers concerning matters of occupational radiation protection and other matters related to applicable provisions of department rules and licenses to the extent the department representative deems necessary for the conduct of an effective and thorough investigation.

(2) During an investigation, a worker or authorized representative may bring privately to the attention of the department representative, either orally or in writing, any past or present condition which he has reason to believe may have contributed to or caused:

- (a) A violation of the act, these rules or license or registration conditions.
- (b) An unnecessary exposure of an individual to radiation from licensed radioactive material or a registered radiation machine under the licensee's or registrant's control.

(3) A written notice presented pursuant to subrule (2) shall comply with the requirements of rule 219(1).

(4) The provisions of subrule (2) shall not be interpreted as authorization to disregard instructions provided pursuant to rule 215.

R 325.5219. Requests by workers for investigations.

Rule 219. (1) A worker or representative of workers who believes that a violation of the act, these rules or license or registration conditions exists or has occurred in work under a license or registration with regard to radiological working conditions in which the worker is engaged, may request an investigation by giving notice of the alleged violation to the Michigan Department of Public Health, Division of Radiological Health, 3500 North Logan Street, Lansing, Michigan 48914. Any such notice shall be in writing, shall set forth the specific grounds for the notice, and shall be signed by the worker or representative of the workers. A copy shall be

provided to the licensee or registrant by the department no later than at the time of investigation except that, upon the request of the worker giving such notice, his name and the name of individuals referred to therein shall not appear in such copy or on any record published, released, or made available by the department, except for good cause shown.

(2) If, upon receipt of such notice, the department determines that the complaint meets the requirements set forth in subrule (1) and that there are reasonable grounds to believe that the alleged violation exists or has occurred, an investigation shall be made as soon as practicable, to determine if such alleged violation exists or has occurred. An investigation pursuant to this rule need not be limited to matters referred to in the complaint.

(3) A licensee or registrant shall not discharge or in any manner discriminate against a worker because a worker has filed a complaint or instituted or caused to be instituted any proceeding under these rules or has testified or is about to testify in any such proceeding or because of the exercise by a worker on behalf of himself or others of any option afforded by this part.

[Note: As a result of Executive Order 2011-4, the authority, powers, duties, functions, and responsibilities of the radiation machine registration, licensing, and compliance program were transferred to the Michigan Department of Licensing and Regulatory Affairs. With respect to machine sources of ionizing radiation, any correspondence to the Michigan Department of Public Health should now be addressed to the Michigan Department of Licensing and Regulatory Affairs, BHS, Radiation Safety Section, P.O. Box 30664, Lansing, Michigan 48909.]

R 325.5220. Investigation not warranted; informal review.

Rule 220. (1) If the department determines, with respect to a complaint under rule 219, that an investigation is not warranted because there are no reasonable grounds to believe that a violation exists or has occurred, the complainant shall be notified in writing of such determination. The complainant may obtain review of such determination by submitting a written statement of position with the director of the department who shall provide the licensee or registrant with a copy of such statement by registered mail, excluding, at the request of the complainant, the name of the complainant. The licensee or registrant may submit an opposing written statement of position with the director of the department who will provide the complainant with a copy of such statement by registered mail. Upon the request of the complainant, the department may hold an informal conference in which the complainant and the licensee or registrant may orally present their views. An informal conference may also be held at the request of the licensee or registrant, but disclosure of the identity of the complainant shall be made only following receipt of written authorization from the complainant. After considering all written or oral views presented, the director of the department or his designated representative shall affirm, modify, or reverse the determination of the department and furnish the complainant

and the licensee or registrant a written notification of his decision and the reason therefore.

(2) If the department determines that an investigation is not warranted because the requirements of rule 219 (1) have not been met, the complainant shall be notified in writing of such determination. Such determination shall be without prejudice to the filing of a new complaint meeting the requirements of rule 219 (1).

(3) If the decision resulting from informal review is contested, the department shall proceed pursuant to rule 2 (2).

PRECAUTIONARY PROCEDURES

R 325.5221. Surveys.

Rule 221. (1) As used in this rule "survey" means a critical evaluation of a facility or area incident to the production, use, release, disposal or presence of sources of radiation under a specific set of conditions to determine actual or potential radiation hazards. When appropriate, the evaluation includes tests, physical examination, source inventory and accountability, and measurements of levels of radiation or concentration of radioactive material present.

(2) Each licensee or registrant shall make or cause to be made such surveys as may be necessary for him to establish compliance with these rules.

[*Note: The requirements of this rule that pertain to radiation machine registration, licensing, or compliance are under the purview of the Michigan Department of Licensing and Regulatory Affairs.*]

R 325.5222. Personnel monitoring.

Rule 222. (1) Each licensee or registrant shall supply appropriate personnel monitoring equipment to, shall require the use of such equipment by, and shall demonstrate compliance pursuant to this rule for:

- (a) Each individual under such circumstances that he receives, or is likely to receive, a dose in any calendar quarter in excess of 25% of the quarterly occupational limit specified in rule 205, (e.g. 300 mrem whole body).
- (b) Each individual under 18 years of age under such circumstances that he receives, or is likely to receive, a dose in any calendar quarter in excess of 5% of the quarterly occupational limit specified in rule 205, (e.g. 60 mrem whole body).
- (c) Each individual except a patient being intentionally irradiated who enters a high radiation area.
- (d) Each individual who is likely to receive a dose in excess of 100 millirem in any 5 consecutive days while in a room or area occupied by a patient while the patient is receiving therapy from any gamma-emitting radioactive material.

- (e) Each individual for whom personnel monitoring is specifically required under other parts of these rules pertaining to specific uses of sources of radiation.

(2) Monitoring devices used to estimate whole body exposure shall normally be worn on the chest or abdomen. The dosimeter assigned for monitoring the trunk of the body shall not be used for any other purposes. If monitoring of other areas of the body (e.g. lens of the eye, extremity) is required by these rules or requested by the radiation worker because of the nature of exposure a separate dosimeter shall be assigned for this purpose. The separate dosimeter shall be designated as an auxiliary dosimeter and the radiation record shall specify the specific area monitored.

(3) If auxiliary dosimeters are assigned in accordance with subrule (2) the specific body area shall be monitored for a minimum 13 consecutive weeks. If this monitoring results in recorded exposures in excess of 25% of the applicable specified quarterly limit in rule 205 (e.g. 300 mrem lens of the eye, 6.25 rem hands), the auxiliary dosimeter shall be permanently assigned to monitor that area.

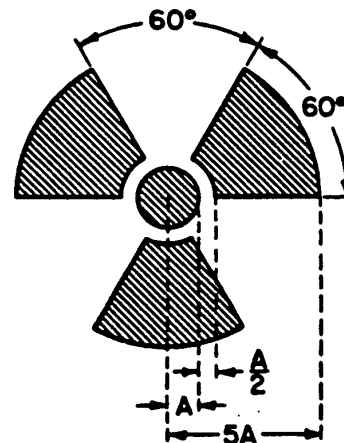
[*Note: The requirements of this rule that pertain to radiation machine registration, licensing, or compliance are under the purview of the Michigan Department of Licensing and Regulatory Affairs.*]

R 325.5224. Caution signs, labels, and signals.

Rule 224. (1) Except as otherwise authorized by the department, symbols prescribed by rules 224 to 232 shall use the conventional radiation caution colors (magenta or purple on yellow background). The symbol prescribed is the conventional three-bladed design:

RADIATION SYMBOL

1. Cross-hatched area is to be magenta or purple.
2. Background is to be yellow.



(2) In addition to the contents of signs and labels prescribed in rules 224 to 232, a licensee or registrant may

provide on or near these signs and labels any additional information which may be appropriate in aiding individuals to minimize being exposed to radiation.

R 325.5225. Radiation area signs.

Rule 225. Each radiation area shall be conspicuously posted with 1 or more signs bearing the radiation caution symbol and the words:

CAUTION
RADIATION AREA

R 325.5226. High radiation area signs.

Rule 226. Each high radiation area shall be conspicuously posted with 1 or more signs bearing the radiation caution symbol and the words:

CAUTION
HIGH RADIATION AREA

R 325.5227. Controls for access to high radiation areas.

Rule 227. (1) Each entrance or access point to a high radiation area shall be equipped with a control device which complies with any 1 of the following:

- (a) It causes the level of radiation to be reduced below that at which an individual might receive a dose of 100 millirems in 1 hour upon entry into the area.
- (b) It energizes a conspicuous visible and audible alarm signal in such a manner that the individual entering the high radiation area and the licensee, registrant or a supervisor of the activity are made aware of the entry.
- (c) It is locked except during periods when access to the area is required, with positive control over each individual entry.

(2) These controls shall be established in such a way that an individual will not be prevented from leaving a high radiation area.

(3) The controls required by subrule (1) (a) shall be constructed in such a manner that the primary radiation cannot be reactivated until all entrances have been secured, and the radiation on-off control is reset at the control panel.

(4) The controls required by subrule (1) (b) shall be constructed in such a manner that when the warning device is activated, it is necessary to shut off or secure the source of radiation and secure all tripped entrances before being able to inactivate the alarm system.

(5) In the case of a high radiation area established for a period of 30 days or less, direct surveillance to prevent unauthorized entry may be substituted for the controls required by this rule.

(6) A licensee, or registrant, or applicant for a license or registration, may apply to the department for approval of methods not included in subrules (1) and (5) for controlling access to high radiation areas. The department may approve the proposed alternatives if the licensee, registrant or applicant demonstrates that the alternative methods of control will prevent unauthorized entry into a high radiation area, and that the requirement of subrule (2) is met.

R 325.5231. Alternate wording for warning signs.

Rule 231. The word DANGER may be used instead of CAUTION in a warning sign required by rules 225, 226, 228, 229 and 230.

R 325.5232. Radiation machine labels.

Rule 232. All radiation machines shall be labeled in a manner which cautions individuals that radiation is produced when the machine is being operated.

R 325.5233. Exemptions from posting and labeling requirements.

Rule 233. Notwithstanding rules 225 to 230:

- (a) A room or area is not required to be posted with a caution sign because of the presence of a sealed source, if the radiation level 30 centimeters (12 inches) from the surface of the source container or housing does not exceed 5 millirems per hour.
- (b) A room or other area in a hospital is not required to be posted with a caution sign, and control of entrance or access thereto pursuant to rule 227 is not required, because of the presence of patients containing radioactive material provided the licensee or registrant has demonstrated by survey or monitoring that any individual who enters this area is not likely to receive a dose in excess of the applicable limit specified in rule 205.
- (c) A room or other area containing radioactive material for periods of less than 8 hours is not required to be posted with a caution sign if:
 - (i) The material is constantly attended during these periods by an individual who shall take the precautions necessary to prevent any individual from being exposed to radiation or radioactive material in excess of the limits established in this part.
 - (ii) The room or area is subject to the licensee's or registrant's control.
- (d) A room or other area is not required to be posted with a caution sign, and control is not required for each entrance or access point to a room or other area which is a high radiation area, solely because of the presence of radioactive material prepared for transport and packaged and labeled in accordance with regulations of the United States department of transportation.

- (e) A room or other area is not required to be posted with a caution sign, and control is not required for each entrance or access point to a room or other area which is a high radiation area, solely because of the operation of a radiation machine during intentional irradiation of a patient if:
 - (i) The radiation machine is constantly attended during these periods by an individual who shall take the precautions necessary to prevent any individual from being exposed to radiation in excess of the limits established in this part.
 - (ii) The room or area is subject to the licensee's or registrant's control.

[*Note: The requirements of this rule that pertain to radiation machine registration, licensing, or compliance are under the purview of the Michigan Department of Licensing and Regulatory Affairs.*]

R 325.5241. Use of safety equipment.

Rule 241. (1) The existence in these rules of requirements for safety interlocks, protective enclosures, protective clothing, precautionary labels, or any other safety equipment presumes the proper use of such equipment. Unauthorized override of safety interlocks or other intentional misuse or non-use of required safety equipment shall be considered willful violation of these rules.

(2) Authorized override of safety interlocks shall be requested by the radiation protection supervisor in writing from the department. The request shall include justification, precautionary procedures during override, and statement of immediate supervision by the radiation protection supervisor or his authorized representative. Prior approval by the department is required. Such approval may be granted by written condition on the specific license or registration certificate or by telephone followed by written confirmation from the department.

RECORDS, REPORTS AND NOTIFICATION

R 325.5245. Records of surveys, radiation monitoring, disposal and tests.

Rule 245. (1) A licensee or registrant shall maintain records showing the radiation doses of all individuals for whom personnel monitoring is required under rule 222. These records shall be kept on department Form RH-102, in accordance with the instructions contained in that form, or on clear and legible records containing all the information required by Form RH-102. The doses entered on the forms or records shall be for periods of time not exceeding 1 calendar quarter.

(2) A licensee or registrant shall maintain records in the same units used in this part, showing the results of surveys required in rule 221, disposals made under rules 238 to 240, and surveys required by other parts of these rules.

(3) Records of individual exposure to radiation and to radioactive material which shall be maintained pursuant to subrule (1) and records of bio-assays, including results of whole body counting examinations, made pursuant to rule 209 shall be preserved indefinitely or until the department authorizes their disposal.

(4) The discontinuance of or curtailment of activities, does not relieve the licensee or registrant of responsibility for retaining all records required by this rule. A licensee or registrant may, however, request the department to accept such records. The acceptance of the records by the department relieves the licensee or registrant of subsequent responsibility only in respect to their preservation as required by this rule.

(5) Records which shall be maintained pursuant to this part may be maintained in the form of microfilms.

[*Note: The requirements of this rule that pertain to radiation machine registration, licensing, or compliance are under the purview of the Michigan Department of Licensing and Regulatory Affairs.*]

[*Note: As a result of Executive Order 2011-4, the authority, powers, duties, functions, and responsibilities of the radiation machine registration, licensing, and compliance program were transferred to the Michigan Department of Licensing and Regulatory Affairs. The Department of Licensing and Regulatory Affairs has renamed Form RH-102 to BHS/HFS-102.*]

R 325.5246. Reports of theft or loss of sources of radiation.

Rule 246. A licensee or registrant shall report by telephone and telegraph to the department the theft or loss of any source of radiation immediately after such occurrence becomes known to the licensee or registrant.

R 325.5247. Notification of incidents.

Rule 247. (1) A licensee or registrant shall immediately notify the department by telephone and telegraph of any incident involving any source of radiation possessed by him and which may have caused or threatens to cause any of the following:

- (a) A dose to the whole body of any individual of 25 rems or more of radiation; a dose to the skin of the whole body of any individual of 150 rems or more of radiation; or a dose to the feet, ankles, hands or forearms of any individual of 375 rems or more of radiation.
- (b) The release of radioactive material in concentrations which, if averaged over a period of 24 hours, would exceed 5,000 times the limits specified for such materials in table II of rules 261 to 269.
- (c) A loss of 1 working week or more of the operation of any facilities affected due to contamination or other potential hazard from radioactive material.
- (d) Damage to property in excess of \$100,000.

- (e) Accidental administration of a radiopharmaceutical to a human patient in excess of the quantity established as appropriate for the procedure at hand.
- (f) Accidental administration of a radiopharmaceutical to a human patient in chemical form different from that established as appropriate for the procedure at hand.

(2) A licensee or registrant shall within 24 hours notify the department by telephone and telegraph of any incident involving any source of radiation possessed by him and which may have caused or threatens to cause any of the following:

- (a) A dose to the whole body of any individual of 5 rems or more of radiation; a dose to the skin of the whole body of any individual of 30 rems or more of radiation; or a dose to the feet, ankles, hands or forearms of 75 rems or more of radiation.
- (b) The release of radioactive material in concentrations which, if averaged over a period of 24 hours, would exceed 500 times the limits specified for such materials in table II of rules 261 to 269.
- (c) A loss of 1 day or more of the operation of any facilities affected or damage to property in excess of \$1,000 due to contamination or other potential hazard from radioactive material.

(3) A report filed with the department pursuant to this rule shall be prepared in such a manner that names of individuals who have received exposure to radiation shall be stated in a separate part of the report.

[Note: The requirements of this rule that pertain to radiation machine registration, licensing, or compliance are under the purview of the Michigan Department of Licensing and Regulatory Affairs.]

R 325.5250. Reports of overdose and excessive levels and concentrations.

Rule 250. (1) In addition to any notification required by rule 247 a licensee or registrant shall report in writing within 30 days to the department:

- (a) Each radiation dose received by an individual or concentrations of radioactive material in excess of any applicable limit as set forth in this part or as otherwise approved by the department.
- (b) Each incident for which notification is required by rule 247.
- (c) Levels of radiation or concentrations of radioactive material (not involving excessive exposure of any individual) in an unrestricted area in excess of 10 times any applicable limit as set forth in this part or as otherwise approved by the department.

(2) A report required in subrule (1) shall describe the extent of radiation dose received by individuals or exposure to radioactive material, including estimates of each individual's dose as required by subrule (3); levels of radiation and concentrations of radioactive material involved; the cause of

exposure, levels or concentrations; and corrective steps taken or planned to assure against a recurrence.

(3) A report filed with the department pursuant to subrule (1) shall include for each individual exposed the name, social security number, and date of birth, and an estimate of the individual's dose. The report shall be prepared so that this information is stated in a separate part of the report.