

SECTION 12: RADIATION PROGRAM

SECTION 12
RADIATION PROGRAM

A detailed description of the division Radiation Program is provided in the LAD Safety Standard S307. Other sources of reference for radiation safety are the Safety and Loss Prevention Manual for Contractors, NRC 10 CFR 150, and Louisiana DEQ regulation (LAC:33 part XV).

The Louisiana Division Radiation Program is administered by the Radiation Safety Officer (RSO), Henry Hopper who is located in building 4103 extension 1877. The RSO will have direct control over any radiation producing device. He must be present for the following tasks: receiving, transporting, installation, removal, and relocation of any radioactive material or device. The RSO will be notified *prior to* any relocation of the device and *will be present* during relocation.

Classifications: Radiation-containing or radiation-producing devices within the Louisiana Division fall into three distinct categories: sealed sources, radiation machinery, and naturally occurring radioactive materials (NORM). Sealed sources may include: level indicators, densitometers, radiographic exposure devices, and lab analyzers. The X-Ray machine used by medical and the certified cabinet x-ray systems are considered radiation machines. Also, NORM is present in some process equipment located in LHC 2.

Training: Personnel in blocks which have radiation-containing or radiation-producing devices are required to have training commensurate with the level of hazard prior to use. The levels of training may vary from the minimum of HAZCOM training on the hazards of radioactive material to a high level of training for those designated personnel who are trained and licensed as radiation safety officers. A list of trained personnel should be documented (Appendix B) and maintained in this section.

Inventory: An inventory of all radiation-containing or radiation-producing devices in the facility must be documented (Appendix A) and stored in this section. This inventory must include the Dow Tag No., isotope, activity, and location. A plot plan showing location of the device(s) is recommended.

Radiation Warning Signs: All sealed sources must have signs posted on or near the device stating "Caution: Radioactive Material". In addition, other signs concerning vessel entry and line openings must be posted as required by the radiation regulations (e.g. warning signs by vessel manways). These signs are available through the RSO.

Inspection performed by the RSO: An installation survey is performed prior to placing a radiation producing device into service. Thereafter, an annual inspection is performed during the first quarter which includes: an inventory check, the physical location, visual inspection of labels and signs, shutter operation testing, and general condition. Wipe testing of sealed sources is performed by the RSO (or trained designee) in accordance with NRC guidelines (i.e. frequency is dependent on the type of nuclide). If the removable activity is >0.005 microcuries (indicating a leaking source), the LAD Industrial Hygiene Department will be contacted. Radiation survey meters are calibrated annually with the exception of those used for compliance with the NORM regulation which are calibrated semiannually.

Personnel Monitoring: Monitoring must be provided for employees who service sealed sources where the whole body dose rate may exceed 5 mR/hr and for personnel performing maintenance on NORM containing equipment.

Emergency Procedures: The plant/department must have a written procedure for notifying security and notifying affected personnel during an emergency involving radioactive materials. Any situation which may compromise the integrity of the containment device such as, fire or explosion is considered an emergency. Plant Security and Radiation Safety Committee Members also have a detailed procedure for dealing with emergencies involving radioactivity.

This section contains the following documents:

1. Plant/Department Specific Radiation Program

Each plant/department containing radioactive sources is required to have:

- a) An inventory (Appendix A),
- b) A list of trained personnel (Appendix B),
- c) In-plant procedures which describe safe handling practices,
- d) Vessel entry and/or line entry procedures, and
- e) Emergency notification procedures.

C,D, and E are usually located in plant procedure manuals or on the computer. Where these procedures are located shall be noted in this section.



The Dow Chemical Company
Midland, Michigan 48674

1803 BUILDING
December 10, 1993

RESTRICTED FOR USE WITHIN DOW
AND SUBSIDIARIES ADDRESSED

Distribution List on Reverse side

cc: G. E. Socha, DowElanco, Indianapolis
P. J. Lachmann, MMD, Cincinnati
G. J. Urbanski, MMD Kansas City

PRENATAL RADIATION PROTECTION POLICY

The new Title 10 of the Code of Federal Regulations Part 20 addresses Standards for Protection Against Radiation. Prenatal radiation protection is described in section 20.1208 and states that

a pregnant radiation worker must be protected so that the dose to the embryo/fetus during the gestation period does not exceed 0.5 rem. This protection can be offered provided the employee chooses to declare their pregnancy in writing to their employer.

To comply with this new standard which becomes effective on January 1, 1994, Dow has developed a process for the implementation of the prenatal radiation protection policy. This flow diagram is attached along with a checklist which can be used to serve as documentation for the policy. A copy of this checklist will be forwarded to the Medical department and filed with the employee's medical records, while the original should be filed with the employee's radiation safety dosimetry records.

Please inform all employees authorized to work with radioisotopes and or radiation producing machines, of this policy and make additional copies as needed.

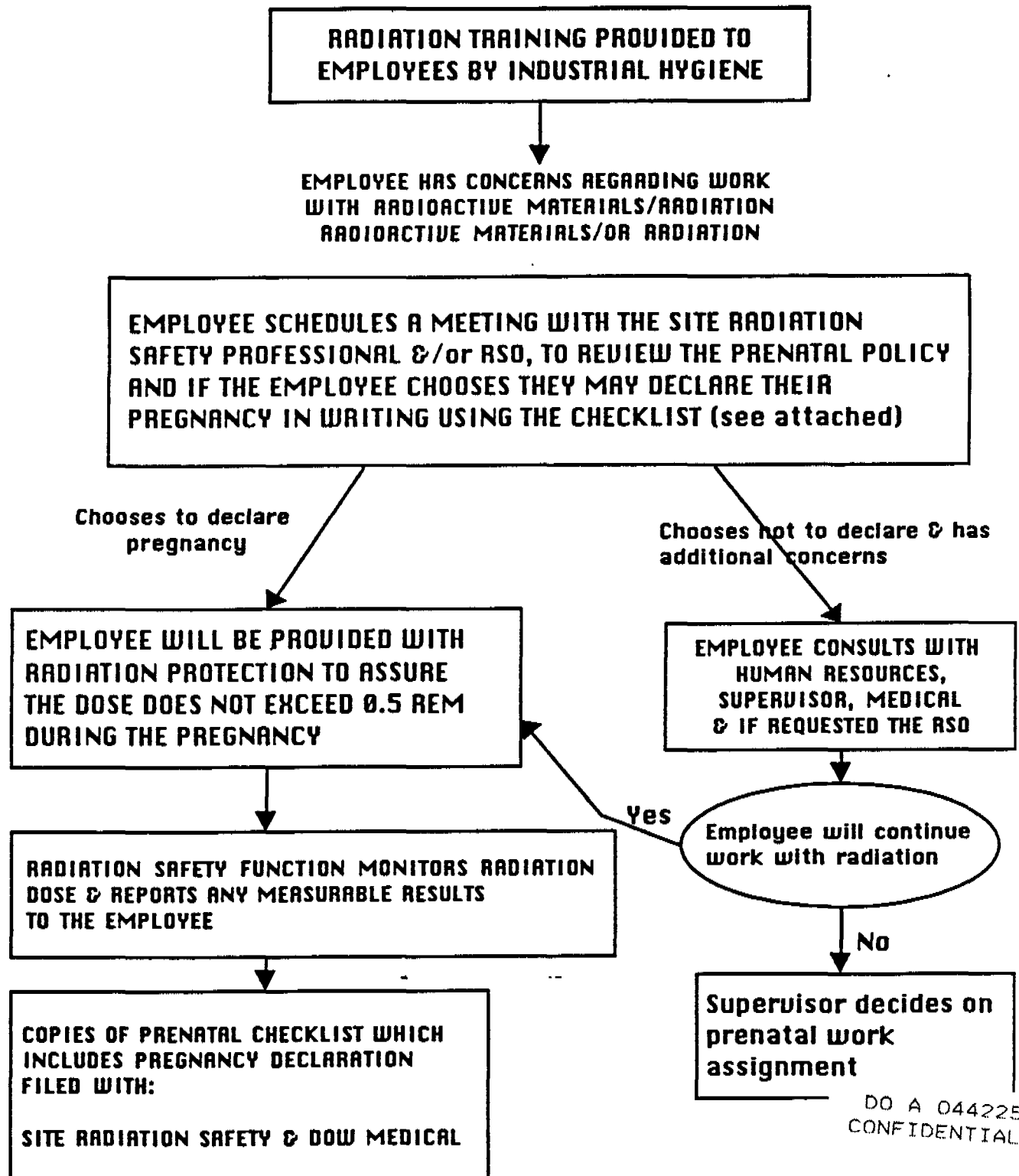
If you have any questions please contact Eva Crim at (517) 636-1440.


S. L. Dombrowski
Chairman Radiation
Safety Committee


E. M. Crim
Radiation Safety Officer

DO A 044224
CONFIDENTIAL

**PROCESS FOR THE IMPLEMENTATION OF THE PRENATAL RADIATION POLICY
FOR EMPLOYEES AUTHORIZED TO WORK WITH RADIOACTIVE MATERIALS
AND/OR IONIZING RADIATION PRODUCING DEVICES**



DO A 044225
CONFIDENTIAL

RADIATION SAFETY MEETING CHECKLIST

PRE-NATAL RADIATION PROTECTION

This meeting between _____ and IH/Rad.safety _____
Employee name Name

on _____19__ is being held to review and discuss pre-natal radiation protection.

To comply with Title 10 of the Code of Federal Regulations Part 20.1208:

I, _____ have chosen to declare to my employer The Dow
Employee name

Chemical Company that I am pregnant. I understand that the Dow radiation protection policy strives to maintain all radiation exposures, as low as reasonably achievable. However, as an approved radioisotope user or authorized operator of radiation producing equipment, I am requesting additional protection, as applicable, for maintaining my radiation dose to 0.5 rem during the term of my pregnancy for which the date of conception is estimated to be _____(month)_____(year).

I, _____ also agree to inform my employer,
Employee name

The Dow Chemical Company, in the event I am no longer pregnant. This notification is necessary to comply with the appropriate exposure limit which for a non-pregnant radiation worker is 5 rem/year.

A copy of the Regulatory guide 8.13 "Instructions concerning prenatal radiation exposure" has been provided.

Initial

Date

The regulatory requirements outlined in 10 CFR 20, "Standards for Protection Against Radiation" regarding occupational radiation exposure and the radiation dose to the embryo/fetus have been reviewed and discussed

Initial

Date

Dow Confidential

DO A 044226
CONFIDENTIAL

EmC 12/93

My job activities involving radioactive material and/or radiation producing equipment have been reviewed and discussed. Radiation safety has made the following recommendations regarding radiation protection measures:

A copy of this checklist will be forwarded to Dow Medical for record keeping purposes.

Employee Signature

Date _____

IH/Radiation Safety Signature

Date _____

DO A 044227
CONFIDENTIAL