



DOW CHEMICAL U.S.A.

June 25, 1975

MIDLAND, MICHIGAN 48640

30-4782

Nathan Bassin
Materials Branch
Division of Materials and
Fuel Cycle Facility Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Bassin:

This refers to your letter dated May 1, 1975, concerning the Dow application for renewal of License No. 21-00265-04.

Enclosed is the information requested in your letter dated May 29, 1974, concerning additional details needed for completion of the license renewal.

With respect to comments on the organization and management control of the radiography program, the following additional information is provided for your consideration.

A statement of the specific duties and responsibilities of Mr. Harry R. Field is enclosed. The duties include performing on-the-job audits, source exchanges, quarterly inspection and maintenance and all radiographer training. (Additional training in "Radiation Safety and Radiography" is presented by one of the health physics staff from the Industrial Hygiene Department).

A description of the on-the-job audits is enclosed as performed quarterly by the welding supervisor, Harry R. Field.

The Dow radiation survey instrument calibration procedure is enclosed. In addition, a copy of the specific procedure used for the radiographers instruments is included. One change to be noted concerning instrumentation is that the radiographers are only supplied with the Victoreen 592B survey instruments. The Eberline Model # E-1206 has been removed from service.

The procedure for exchanging radiographic sources is enclosed. Section 2 of the procedure states by whom the source exchange will be performed.

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AN OPERATING UNIT OF THE DOW CHEMICAL COMPANY



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Procedures for inspection and maintenance of the radiographic equipment and storage cabinet are enclosed. The quarterly inspection and maintenance checks are listed in section B of the procedures. The specifics of the procedure are to perform the required inspection as listed, document findings and correct any faulty findings. The inspection is to be performed by a Level II Radiographer. Inspection and maintenance records are audited by health physics personnel on a routine basis during film badge exchanges each month. Any equipment malfunction which is not readily repairable is reported to the welding supervisor and Industrial Hygiene immediately so appropriate action can be taken.

Training of radiographers will be performed by Harry R. Field and a representative of the health physics staff. The qualifications for Harry R. Field are given in the summary of responsibilities (based on classification as Level III Radiographer and supervisory responsibilities). Formal "Radiation Safety" training of radiographers is conducted by the health physics staff as prescribed by Title 10, Code of Federal Regulations, Parts 20, 30 and 34. The health physicists are Larry G. Silverstein, G. W. Engdahl and R. A. Olson. All health physicists have graduate (M.S.) degrees in health physics and specific qualifications are given in the enclosed resumes.

The present training program at the Dow Chemical Company for radiographers is completed in accordance with guidelines set by the American Society for Nondestructive Testing (A.S.N.T.). According to these guidelines the Level I Radiographer replaces what was referred to as a radiographers assistant in the training program previously submitted. In the training program submitted, you questioned who was performing the training and judging competence for individuals to be Level I Radiographers (previously radiographers' assistant). The enclosed "Program for Radiographers Certification" should be added to the Training Program section of our license submittal. As indicated previously, the classroom training for the Level I radiographer will be performed by Harry R. Field and the health physics staff. The individuals will be required to take an examination (scoring 70% or better) administered by Harry R. Field. Harry R. Field will also observe the Level I Radiographer use the radiation source and survey meter. This demonstration is to ensure proper field use of operating procedures and survey instruments. Level I radiographers will work under the direction of a Level II or III Radiographer. Training is limited to a management function.

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With respect to the operating and emergency procedures, we have the following comments on the areas you questioned.

1. In the operating procedures, reference is made to reading pocket dosimeters in section A., Part 1., b and d, Part 18 and Part 25. Parts 18 and 25 provide for dosimeter check and recording before and after each exposure of the cobalt source. Part 28 of the operating procedures informs the operators of what actions to take in case both operators' dosimeters are found off scale. The TLD badge provides for immediate (within 24 hrs) evaluation of exposure. The TLD dosimetry system purchased by Dow is the Harshaw Chemical Company, Model 2000C card reader and Model 2000B picoammeter. The TLD card is mounted in a badge holder and contains two (2) LiF chips (1 chip for backup). The TLD system is being evaluated against film badges and is presently only a backup. When (approx. 4-6 mo) testing, administrative, Q.C. and operating procedures are completed and the TLD system is approved by the Dow Radiation Safety Committee, regulating and insuring agencies this system will become the primary dosimetry system for Dow personnel. A copy of all procedures for the TLD system will be submitted to the Materials Branch of N.R.C. for approval in relation to Dow licensed activities in Midland.

In the emergency procedures (I.A.3), a pocket dosimeter which has discharged off scale is considered an emergency requiring immediate implementation of general emergency procedures in section I.B. Section II.C. lists specific procedures for suspected overexposure of radiographers or others.

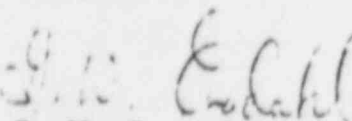
2. Section A.8 of the operating procedure specifies the maximum radiation level in the passenger compartment of the transport vehicle as 2 mr/h. The actual level is recorded on the radiation survey check form.
3. The emergency procedures have been redrafted to provide more pertinent information on specific duties and responsibilities of radiographers. Specific procedures (emergencies) are listed in Section II, page 2 of the enclosed emergency procedures.

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4. The maximum allowable radiation exposure to an individual radiographer as a result of replacing a lost source (Section II.B.2d) and for vehicle accidents (Section II.B.4d) has been reduced to 500 mrem. Based on calculations for a 5 Ci Cobalt-60 source, the radiographer would have at least 2-3 minutes of working time at close distances (arms length) before receiving 500 mrem whole body exposure. Replacement of the source should be planned at a distance from the source so working time at the 3 ft source distance is minimal. For Cobalt-60, the Γ (specific gamma ray constant) equals 1.32 R/h. at 1 meter/Ci. For a 5 Ci source, the radiation exposure rate at 1 meter equals 6.6 R/h. or 110 mrem/min. At 0.5 meters, the exposure rate is 440 mrem/min. All manipulations are to be done with pliers or tools of some type such that extremely high extremity (hand) doses are kept as low as practicable. The radiographers do the majority of their work in the Midland area where a health physicist is readily available for help in the case of a lost source or vehicle accident. However, it is mandatory in the Dow radiographers training program to become familiar with accident procedures. If an accident should happen at a location other than Midland or if health physics is not readily available, the radiographer is prepared to respond to the situation. For special handling problems with the source which result from an accident, the radiographers are trained to limit access to the area until health physics help arrives. The 500 mrem exposure limit in accident situations is believed to be a safe and reasonable value for a situation where health and safety of the general public is concerned. It also allows the radiographer to continue his job without exceeding his allowed 1250 mrem/quarter. This is based on past experience with Dow radiographer whose exposure is usually 0-50 mrem/month.

One additional note for your records is that the health physics staff is now located in 1803 Building, Midland, Michigan. Please address any further questions which you might have to me. Thank you.

Sincerely,



G. W. Engdahl
HER Industrial Hygiene
1803 Building
517-636-3677

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DOW CHEMICAL U.S.A.

June 26, 1975

MIDLAND, MICHIGAN 48640

RESPONSIBILITIES OF HARRY R. FIELD

1. Mr. Field is the supervisor of the Welding Engineering Department of the Michigan Division of the Dow Chemical Company. He is responsible for the technology, development and quality of welding. As part of the Quality Control Program, he has inspectors and technicians who use X-ray and Cobalt 60 sources for radiographic examination of welds and also miscellaneous jobs where radiography is required.

He is also classified as a Level III Radiographer base on 15 years experience in weld examination by the use of X-ray and Gamma Ray sources.

He is responsible for the training program for the radiographer. He teaches the basic principles of radiography and has one of the Industrial Hygienists teach the course on "Radiation Safety." The Industrial Hygienist also conducts the six month review.

He is responsible for the equipment and procedures for handling and operating the equipment. He is also responsible to check the log-book for proper entries and inspection data. Quarterly, he will visit a job site and observe the radiographers at work to insure they are using the procedures for handling and following the safety regulations.

