

UNITED STATES
ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

November 19, 1970

G. W. Roy, Chief, Materials Inspection and Enforcement Branch
Division of Compliance, Headquarters

INSPECTION REPORT - MALLINCKRODT CHEMICAL WORKS, ST. LOUIS, MISSOURI
LICENSE NO. 24-4206-1

Attached is the report of an inspection of subject licensee which was conducted on October 20-23, 1970. The attached report sets forth ten items of noncompliance. One item concerns excessive radiation levels in unrestricted areas; two items relate to the lack of surveys; one item relates to a posting deficiency; one item concerns inadequate instruction of personnel; three items concern record deficiencies; one item relates to reporting deficiencies; and one item concerns the failure to follow written procedures.

As part of the Commission's Independent Measurements Program, a TLD station was set up on the roof of the building immediately across a driveway which runs along the licensee's north boundary fence. The results of the TLD measurements for the 30-day period between April 11 and May 11, 1970, showed a total of 536 mr which is equivalent to a continuous 0.75 mr/hr over the entire 30-day period. The licensee recently purchased property which adjoins his previous property on the west and northwest. This new acquisition increases the licensee's property about fourfold. As soon as the newly acquired facilities can be put to use, the licensee hopes to be able to move the solid active waste handling and storage facilities away from the present area which is just inside the north fence line. This action will probably solve the problem only in part since radiation levels noted on the roof of the main production facility also indicate a contributing factor to the TLD results.

A copy of the basic data resulting from the Independent Measurements Program for the period November 1969 - August 1970 was given to the licensee for copying during this inspection per telecon with Larry Denton, CO:BQ, on October 15, 1970.

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As a service to their radiopharmaceutical customers, the licensee accepts returned Mo-Tc generators for reclaiming and miscellaneous byproduct material wastes for handling and transfer to a commercial waste disposal agency. Little or no information is recorded as to the contents of the miscellaneous waste packages and no radiation level surveys have been made of these incoming packages. In addition, records of outgoing waste shipments do not show the isotope and quantity in the packages, in all cases.

A radiation area on the roof above the solid active waste room was not posted and radiation level surveys had not been conducted to determine the need for posting.

During the second calendar quarter, 1970, two persons received overexposures to the wrists as evidenced by wrist film badge results. These overexposures were not reported to the Commission pursuant to 10 CFR 20.405(a). The licensee claims that the film badge results, as given by the film badge supplier, are much higher than they should be when the film badges are exposed to the low energy gammas from mercury 197. The licensee has been conducting studies in an attempt to establish this as a fact. During the inspection the licensee was advised that the results of film badge readings that indicate an overexposure must be reported per 10 CFR 20.405(a) and that the report could include the licensee's feeling as to the validity of the film badge results with an indicated followup regarding any studies and substantiation of the invalidity of the film badge readings.

Results of film badge readings have not, in all cases, been received from the film badge supplier and, therefore, not available for inspection.

The licensee's Health Physics Procedures Manual, dated October 1, 1968, requires all individuals working in radiation areas to make periodic radiation level surveys in their particular areas during each work day. The failure of one individual to conduct such surveys resulted in his receiving an overexposure to his right wrist. This was reported to the Commission as required by 10 CFR 20.405(a).

During the week of June 15, 1970, one individual received an overexposure to iodine 125 as evidenced by thyroid counting results. A 30-day report regarding this overexposure was submitted to the Commission. The exposure occurred during the production of I-125 diagnostic capsules involving a total of about 30 millicuries. This manual operation is

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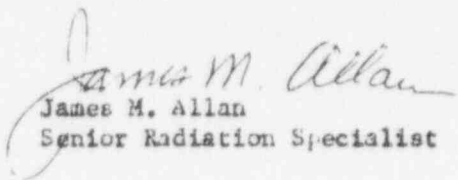
set up to be conducted entirely within a hood behind lead bricks and lead glass shielding. It was determined that the light within the hood was burned out and, as a result, the individual stuck her head in the hood in order to read the markings on a graduated syringe. Also, the technician performed one part of the operation on an open bench top next to the hood. It was stated that the technician had had extensive experience in handling isotopes in various production operations and had received oral instructions regarding proper radiation safety procedures. However, no specific radiation safety procedures have been written for individual production operations. The only written procedures are batch sheets, which are step-by-step production procedures for all individual production operations. Mr. Marvin Murray, Manager, Administrative Services, advised that in the future radiation safety instructions will be written for each specific operation and will be attached as a cover sheet to all individual batch sheets which must be read by the technicians.

The results of a continuous air sampler operating near the above mentioned hood showed less than the occupational MPC for iodine 125 of 5×10^{-5} uCi/ml during the period in which the incident occurred.

The only significant health and safety problem noted during this inspection appeared to be the lack of specifically written radiation safety instructions and precautions given to individuals working with byproduct materials. A properly written radiation safety instruction for each of the batch sheets mentioned previously will probably correct this situation only if followed through by day-to-day health physics coverage.

It is suggested that any correspondence concerning the results of this inspection be directed to Mr. Frank A. Schottelkorb, Director of Operations.

Region III plans an early reinspection of this byproduct material program.


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CO:III:ECA

Enclosure:
Inspection Report (orig. & 2 cys)

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