

UNITED STATES  
ATOMIC ENERGY COMMISSION  
DIVISION OF COMPLIANCE  
REGION III  
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December 27, 1971

Gen W. Roy, Chief, Materials and Fuels Facilities Branch  
Division of Compliance, Headquarters

MALLINCKRODT CHEMICAL WORKS, MALLINCKRODT/NUCLEAR  
ST. LOUIS, MISSOURI - LICENSE NO. 24-04206-01

Enclosed is an inspection report, for your information, of an announced inspection of the subject byproduct material program conducted on December 6 - 9, 1971.

A total of five items of noncompliance were noted. Three of these items related to the exposure of one individual to an excessive concentration of iodine 131 as evidenced by thyroid gland counting and the failure of the licensee to report this exposure to the Commission and to the individual as required by 10 CFR 20.405.

During routine thyroid counting on the morning of Friday, July 2, 1971, one individual [REDACTED], (Social Security No. [REDACTED] and date of birth [REDACTED]) showed a thyroid burden of 1.49 x 0.14 microcurie of iodine 131 in the thyroid. Subsequent thyroid counting of this individual on July 6 showed 1.14 x permissible; on July 7, 1971, a thyroid count of 97% was found; and on July 8, 1971, a thyroid count of 90% was found. Subsequent daily thyroid counting showed the thyroid burden to be reduced to 10% by July 28, 1971. [REDACTED] thyroid burden for the seven consecutive days of July 2 through July 8, 1971, was, therefore, an average of approximately 1.24 x 0.14 microcuries. Don Soldan advised during this inspection that Mallinckrodt had interpreted seven consecutive days as taking place in one calendar week rather than any seven consecutive days; therefore, the numerical average, by calendar week, was not excessive and as a result, was not reported as required by 10 CFR 20.405. It was clearly explained to Soldan by E. C. Ashley during this inspection that the thyroid gland does not know of the existence of calendars and the presence of iodine in the thyroid gland in excess of 0.14 microcuries, averaged over any seven consecutive day period, is considered by Region III as excessive thyroid burden, which constitutes noncompliance with 10 CFR 20.103 and is reportable under 10 CFR 20.405(a) and (b).

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The fourth item of noncompliance concerned the failure of the licensee to maintain records of an evaluation of personnel exposure. In this instance, two air samplers in the Quality Control Department showed results of 1.33 and  $1.65 \times 9 \times 10^{-9}$  microcuries per ml, respectively, during the week of July 29 to August 5, 1971. Although it was determined by interview with licensee employees in the QC Department and the Health Physics Unit during this inspection that time weighted personnel exposure evaluations were made to show that no one was exposed to excessive concentrations of iodine 131, no records of these evaluations were available for inspection, contrary to 10 CFR 20.401(b).

The fifth item of noncompliance concerned the failure of the licensee to submit reports to the Commission and to individuals who have terminated employment or work assignment, as required by 10 CFR 20.408. The licensee stated during this inspection that a total of 31 persons have terminated employment or work assignment in the licensee's facilities in 1971 up to the date of this inspection, and that failure to submit reports to the Commission or to the individuals was an oversight on their part.

During this inspection, it was noted that the licensee had been steadily reducing the external exposures to individuals. A review of personnel monitoring records showed that during the second and third quarters of 1971, the maximum whole body exposure to any individual has been approximately 2 rem per calendar quarter. Also, with the exception of the one person noted above, thyroid counting data showed that during the period May 1 to December 3, 1971, only two or three persons have exceeded 50% of 0.14 microcuries averaged over any seven consecutive days.

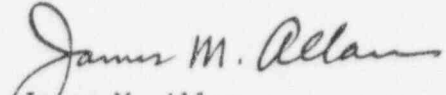
During the Summer of 1971, the licensee made extensive modifications and improvements to their air handling systems which has resulted in significant reductions in air effluents. These modifications also included the construction of one inch thick lead walls around the filter bank housings which serve the hot cell and have resulted in a significant reduction in radiation levels at the boundary of the licensee's facilities.

Gen W. Roy

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The noted items of noncompliance will be reviewed during our next inspection scheduled for May 1972.

  
James M. Allan  
Senior Radiation Specialist

Enclosure:

Rpt No. 71-02 (orig. & 2 cys)

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