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

CO:III:ECA/CDH

Attached is the report of a reinspection of the subject licensee
which was conducted on April 24, 25, 26, 27, and 28, 1967.

This report sets forth eight items of noncompliance. The first item
concerns the failure of the licensee to obtain the exposure history
for a person [REDACTED] prior to allowing that person to receive
a whole body exposure in excess of 1.25 rem in a calendar quarter. Ex 6

The second item concerns the failure of the licensee to survey
laboratory uniforms prior to sending to a commercial laundry to
assure that significant amounts of contamination were not sent to
the laundry.

The third item concerns the licensee's failure to survey production
area "cold" waste prior to disposal through normal trash. Readings
of up to 70 mrad/hr were found in the "cold" waste during independent
measurements.

The fourth item concerns the failure of the licensee to perform in-
plant, stack, or environmental air sampling during December, 1966
through March, 1967 even though the licensee's production schedule
was uninterrupted.

The fifth item concerns the release of quantities of radioactive
materials to the sanitary sewerage system in concentrations exceed-
ing the limits specified in 10 CFR 20.

The sixth item concerns the failure of licensee to maintain records
of surveys made of laboratory coats sent to a commercial laundry.

The seventh and eighth items concern the licensee's failure to sub-
mit written reports to the Commission and to the individual who
received an overexposure. (See the first item mentioned above.)

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The above noted items of noncompliance were discussed with the licensee management including W. R. Konnecker, Vice-President and D. W. Soldan, Manager, Health Physics Department.

The licensee representatives stated the failure to have the exposure history for [redacted] as simply an oversight. [redacted] transferred to the licensee from Mallinckrodt's Weldon Springs, Missouri facility. Soldan stated that the transfer of Bushman's exposure history was delayed through a mix-up in communication with the Weldon Springs people and that this history will be obtained at once.

Ex 6

The licensee began furnishing its isotope workers with uniforms in mid April, 1967. These uniforms consist of men's shirts and pants and women's dresses. The fact that the first batch of these uniforms were sent to a commercial laundry without being surveyed for contamination was an oversight according to Soldan.

The routine duties of Health Physics Department technicians include the daily surveying of "cold" waste baskets except in the main production area. As a result, the "cold" waste baskets in the main production area have not been surveyed before dumping through normal trash (combustible to incinerator and solids to "dumpster".) It was noted during the inspection that a "cold" waste basket and a dry active waste can (with cover) are located side by side at various places throughout the main production area. Soldan advised that a production laboratory technician will be trained to use a survey meter. Also each of the baskets will be numbered and surveyed at the end of each working day. The survey results will be recorded in a log book which will identify each meter reading with basket number in order that the contaminated articles can be traced to area involved.

No air sampling had been performed from December 8, 1966 until March 31, 1967. It was during this time that the licensee had made the move into the new building addition. Discussions with Soldan and Bushman revealed that this time was used to install the sampling heads on the 1½" PVC tubing throughout the plant, run 26 lines from all points on the roof back to the furnace room, and obtain and install a new vacuum pump for the system. [redacted] stated that during freezing weather it had been impossible to obtain any samples from the roof, environmental or stack, because the lines were frozen in ice which had accumulated on the flat roof. In addition, condensation in the stack lines would freeze and block air flow. The lines were brittle and would crack and break. Soldan stated that, at one time during this period of not taking air samples, it was mentioned to Dr. Konnecker, who replied something to the effect of "First things first - do what you can." This was during a period of time that Soldan and [redacted] were the only two persons within the Health Physics group.

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The release of excessive concentrations of liquid active waste to the sanitary sewerage system appears to have been caused by two separate reasons. The first was a decimal error in the licensee's calculations in determining the maximum permissible counts per minute per tank sample prior to dumping a variable number of gallons from the tank. The second was Soldan's interpretation of 10 CFR 20.303(b). Soldan's impression was that the "average daily concentration" based on an average water dilution for a several day period - including dilution for days when no radioactive materials were discharged - was the limit that had to be met.

Concerning the recording of the results of surveys made of laboratory coats, the licensee stated that a log book would be put into use at once for this purpose.

The majority of the problems noted during the inspection appeared to have stemmed from the licensee's move into a new building addition and the lack of administrative control. Prior to the move Dr. Konneker's October 13, 1966 cover letter for a license amendment request stated in part, "It is our intent to get moved into these facilities just as quickly as possible and immediately start to accumulate data on (1) Our air concentrations inside and outside the building (the system is already installed and ready to go.)" Soldan stated that Konneker was under the impression that the system was "ready to go" at that time but didn't realize Soldan's difficulty in obtaining the necessary parts. For further information regarding this matter please see Exhibit "C-1" and paragraphs 88 - 90 of report details.

During the period of moving into the new production facility the licensee experienced a great deal of area contamination (see paragraphs 82 - 85 of report details.) At the same time, the licensee's records (and statements) revealed no significant personnel uptakes of radioactive material.

One of the biggest improvements noted in the licensee's program is the decrease in personnel exposures - both internal and external. This is due to greatly improved facilities and equipment.

Beginning in March, 1967 the licensee management has begun weekly meetings for the purpose of discussing and evaluating health physics problems associated with various aspects of the licensed program. These meetings have allowed a much improved administrative control. The heads of each department have been given the responsibility for the general health - safety aspects of his own area. This area control is correlated with the Health Physics Department in most

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cases. Since the last previous reinspection the Health Physics Department has been upgraded considerably. Mr. Soldan now has three full-time persons assisting him in carrying out the licensee's health physics program. For further information regarding the licensee's health physics organization please see Exhibit E and paragraphs 69 - 77 of the report details.

It is suggested that correspondence regarding this inspection be directed to W. R. Konneker, Vice-President.

Region III plans to conduct a follow-up inspection upon completion of enforcement action.

Enclosures:

Inspection Report (orig & 1 cy)