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To File:

RADIOLOGICAL SCIENCES DEPARTMENT INVESTIGATION RADIATION INCIDENT, CLASS I, NO. 371

Nature of Incident

Spread of particulate contamination at the Biophysics Laboratory, Building 329, 300 Area on July 6, 1954.

Description of Incident

During a routine beta-gamma hand and shoe count, an employee discovered that his shoes were contaminated. Follow-up surveys were initiated promptly and the shoes of eight other persons were found contaminated. A thorough radiation survey of the building located approximately 50 individual spots of floor contamination, ranging from 200 c/m to >80,000 c/m, one of which indicated an uncorrected dose rate at 3" of 20 mrad/hr including 10 mr/hr. The majority of the contamination was found in rooms 16 B and 11 B and adjacent corridors. Decontamination of all shoes and floors was successful.

Discussion of the Incident

A short term study requiring the physical separation of radioactive particles from non-radioactive matter was being performed by the Control Unit and the Industrial Hygiene group. It is believed that during the separation some of the particles were tracked or carried from the two rooms, (16 B and 11 B), used for this work.

No formal planning for radiation or contamination control had been undertaken in advance of this work. This is evidenced by the lack of specific operating procedures or special work permits. However, room 16 B had been purged and the ventilation inlet supply had been greatly reduced to keep better control

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over individual particles. Also, Radiation Monitoring assistance had been requested for the handling of particles of known high activity density. Nevertheless, because of the lack of positive radiation and contamination controls, it was possible for an employee to become contaminated and, without knowing it, to act as a carrier of the contamination later found in the corridors and locker room.

Discussion of Dosimetry

The particles under study were derived from the Redox process and were not of a size normally considered respirable. However, as respiratory protection was not worn during the separation or during subsequent work, bioassays were scheduled for the people principally involved.

There was no recorded skin or clothing contamination except for the shoe contamination. Personnel meters worn by the building occupants during the day of the incident did not indicate any abnormal radiation exposure.

Cause of the Incident

1. Lack of adequate radiation control procedures.

Recommendations

1. The radiation hazard controls for short term studies be reviewed and adequate procedures be prepared and approved by both operating and monitoring supervision in advance of each study.

RADIOLOGICAL SCIENCES DEPARTMENT

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