D: Internal Radiation Dose and Biology

64

DISCUSSION ON SOFTWARE OF RADIATION MANAGEMENT IN A MEDICAL INSTITUTION. S.Itoh, M.Sakura,T.Ishihara and T.Nagai. Saitama Cancer Center and Gumma University. Ina and Maebashi.

Problems of radiation management are divided into the hardware relating to equipment and the software relating to system and operation. Based on our experience in radiation management in the cancer center and the university hospital,the software of radiation management in medical institution was discussed. The most important problem concerning the system is whether full-time staff(s) is necessary or not. It is considered that existence of full-time staff(s) is of advantage economically in a large institution. If physician,radiological technician or medical physicist hold an additional post ,it seems that expences are saved,but it is of disadvantage in the long run. The radiation management in a medical institution has relation to several laws and regulations according to variety of radiation sources or their uses. It is considered that if every radiation source used at each institution are controled within the frame work of a common regulation set in each institution, simpler system of the radiation management can be framed. Problems of arrangement of documents and partial commitment of the operation to a professional team were also discussed. It is desirable that self inspection is practiced regularly.

65

ESTIMATION OF CONTAMINATION OF RADIOISOTOPE LABORATORY BY THE SMEAR METHOD AND DECONTAMINATION.

Satomi Hakariya, Hiroshi Iwasaki, Tsugio Hirakata, Akihisa Nakashima and Zen-ichiro Hombo.(Department of Radiology, Nagasaki University School of Medicine)

New central examination laboratories of Nagasaki University Hospital were built, and the radioisotope laboratory moved there. As the previously-used radioisotope laboratory was to be used for another purpose, the contamination of the laboratory was estimated and thereafter it was decontaminated. The estimation of the contamination was performed by the smear method. Measured points were of 650, and the radioactivity of ^{75}Se, ^{125}I and ^{3}H was measured by an autowell counter and a liquid scintillation counter. Needed correction was applied to the measured values.

The contamination was mainly observed at the in vitro laboratory where workers from various departments come to. Especially draft chambers, exhaust ducts, sinks and utensils were highly contaminated. Contaminated nuclides were ^{125}I and ^{3}H, and the contamination was at the level of from 10^{-3} to 10^{-4} $\mu ci/cm^2$. A large part of the laboratory was contaminated at the level of below 10^{-4} $\mu ci/cm^2$. Several points showed 10^{-2} $\mu ci/cm^2$ of the contamination by ^{3}H. For in vivo laboratory, contamination of above 10^{-4} $\mu ci/cm^2$ was not observed, probably due to short life of the nuclides used.

66

ESCAPE OF RADIONUCLIDES FROM CARCASS DURING MICROWAVE DEHYDRATION PROCESS. S.Sanada, T.Orito,H.Mori,Y.Kikuta,A.Ando and K.Hisada. School of Paramedicine,Radioisotope Center, Institute of Radioisotopic Sciences and Scool of Medicine Kanazawa University Kanazawa.

A method of the dehydration with microwave was developed for the waste disposal of carcass contaminated with radionuclide. The movements of the radonuclides from the carcass must be examined for the radiation safety.

So the ratio of radionuclides escaped to the exhaust and the condenced water from the carcasses contaminated with various labeled compounds ($^{22}NaCl$, $Na^{51}CrO$, ^{67}Ga-citrate, ^{75}Se-selenomethionine, $Na^{131}I$, $^{137}CsCl$, $^{201}TlCl$, ^{203}Hg-chlormerodrin, (6-^{3}H)thymidine, L-(U-^{14}C)leucine, L-(1-^{14}C)leucine and (2-^{14}C)thymidine) during dehydration process(DEHYD-β Type N-2) were measured with Ge(Li)spectrometer and Liquid scintilation counter.

The ratio of volatile radionuclides (Se-75, I-131 and Hg-203) escaped to the exhaust and the condenced water were 0.01-1.0%, ^{3}H labeled compounds escaped to the exhaust were 0.03-0.05% and to the condenced water were 1.0-3.1%, ^{14}C labeled compounds escaped to the exhaust were 0.1-3.6% and to the condenced water were 0.01-0.08% of the administrated dose.

Based of these results, the way to perform of the radiation control about the microwave dehydration was discussed.