

# *in situ* MEASUREMENT OF OUTDOOR GAMMA RADIATION IN REDEMPTION CAMP, OGUN STATE, NIGERIA.

Adesiji N.E. , Toluwalase O.O.

Department of Physical Sciences, Redeemer's University, Redemption City, Mowe, Ogun State, Nigeria.

[Email: nkiruonwuka@yahoo.com](mailto:nkiruonwuka@yahoo.com)



## 1. INTRODUCTION

Humans are constantly exposed to ionising radiation found naturally in air, water. Outdoor gamma exposure arises from exposure from terrestrial radionuclides of  $U^{238}$  and  $Th^{232}$  series and  $K^{40}$ . For a fast growing city like Redemption City, the knowledge of the ionising radiation the public is exposed to is important. It will help in estimating the annual effective dose the general public is exposed to, will serve as a comparison data for future radiological assessment and will be use to reveal activities that might enhance the environmental radioactivity in the future.

## 2. OBJECTIVE

To estimate the annual outdoor gamma effective dose of the people in Redemption city.

## 3. METHOD

The study area is Redemption City located at Mowe, Ogun State. It hosts the Redeemer's University and lots of plants like the gas turbine plant for power generation. The instrument used was a RDS-30 Radiation Survey Meter, it is factory calibrated with calibration accuracy of  $\pm 5\%$  and is capable of recording dose rate as low as  $0.01 \mu\text{Svh}^{-1}$  to a maximum of  $100,000 \mu\text{Svh}^{-1}$ . Reading were taken in 48 locations. These locations were chosen because they experience a lot of human traffic. At each location, the survey meter was held 1 m above the ground (Jibiri *et al*, 2007) each location reading was carried out at least five times, the average of the five measurements was taken as the dose rate of that particular point.

## 4. RESULT

LOCATIONS	EFFECTIVE DOSE RATE ( $\mu\text{Svh}^{-1}$ )
3-6,8,9,13,15,17-24,,26, 29-34,37,41-43,46,48	0.90
25,36,39,40	0.10
7,10-12,14,16,27,28,38,45,47	0.11
1,2,35,44,	0.12

Using the outdoor occupancy factor of 0.2 (UNSCEAR 2000), the annual effective dose was estimated to range between 0.16 mSv to 0.12 mSv.

## 5. CONCLUSION

Locations 1,2, 35 and 44 that recorded the highest dose rates are the Reference Library, Main Library, Inside the Clinic and Conoil Petrol Station. These slightly high levels recorded could be due to the fire detectors used at these locations. The estimated effective doses were above the annual outdoor effective dose of 0.07 mSv estimated by UNSCEAR 2000 for outdoor gamma exposure.

## REFERENCE

Jibiri N.N., Farai I.P., Alausa S.K. (2007) *Estimation of Annual Effective Dose due to Natural Radioactive Elements in Ingestion of Foodstuffs in Tin Mining Area of Jos-Plateau, Nigeria*. Journal of Environmental Radioactivity Vol 94 p 31-40

United Nations Scientific Committee on the Effect of Atomic Radiation (UNSCEAR 2000) Report. *Sources and Effect of Ionising Radiation* Vol 1 Annex B