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Title: A Descriptive Spatial Analysis Of The Relationship Between Geology, Aeroradioactivity And Incidence Of Cancer With Indoor Radon Measurements For The State Of Virginia

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## ABSTRACT

This dissertation used a geographic information system (GIS) to perform descriptive spatial analysis of the relationship between the geology of the state of Virginia, aeroradioactivity data, indoor radon concentrations, and the incidence of lung cancer, chronic bronchitis, and chronic pneumonia. This study examined methods for creating radon potential maps, to predict radon concentrations in as-yet untested homes in the state of Virginia. Predictive maps of this type could be useful to human health experts interested in determining the community's exposure to radon, the potential incidence of lung cancer related to indoor radon, and the criteria for home construction in high radon areas.

This dissertation showed that county averages of the incidence of lung cancer, chronic bronchitis, and chronic pneumonia are well correlated. Also, the dissertation showed that aeroradioactivity can be used to locate geological areas with higher soil radioactivity and areas with higher indoor radon. Evidently, the use of NURE data to identify areas underlain by uranium rich rock is the best way to create a radon potential map.