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Rasmussen, Torben Valdbjørn

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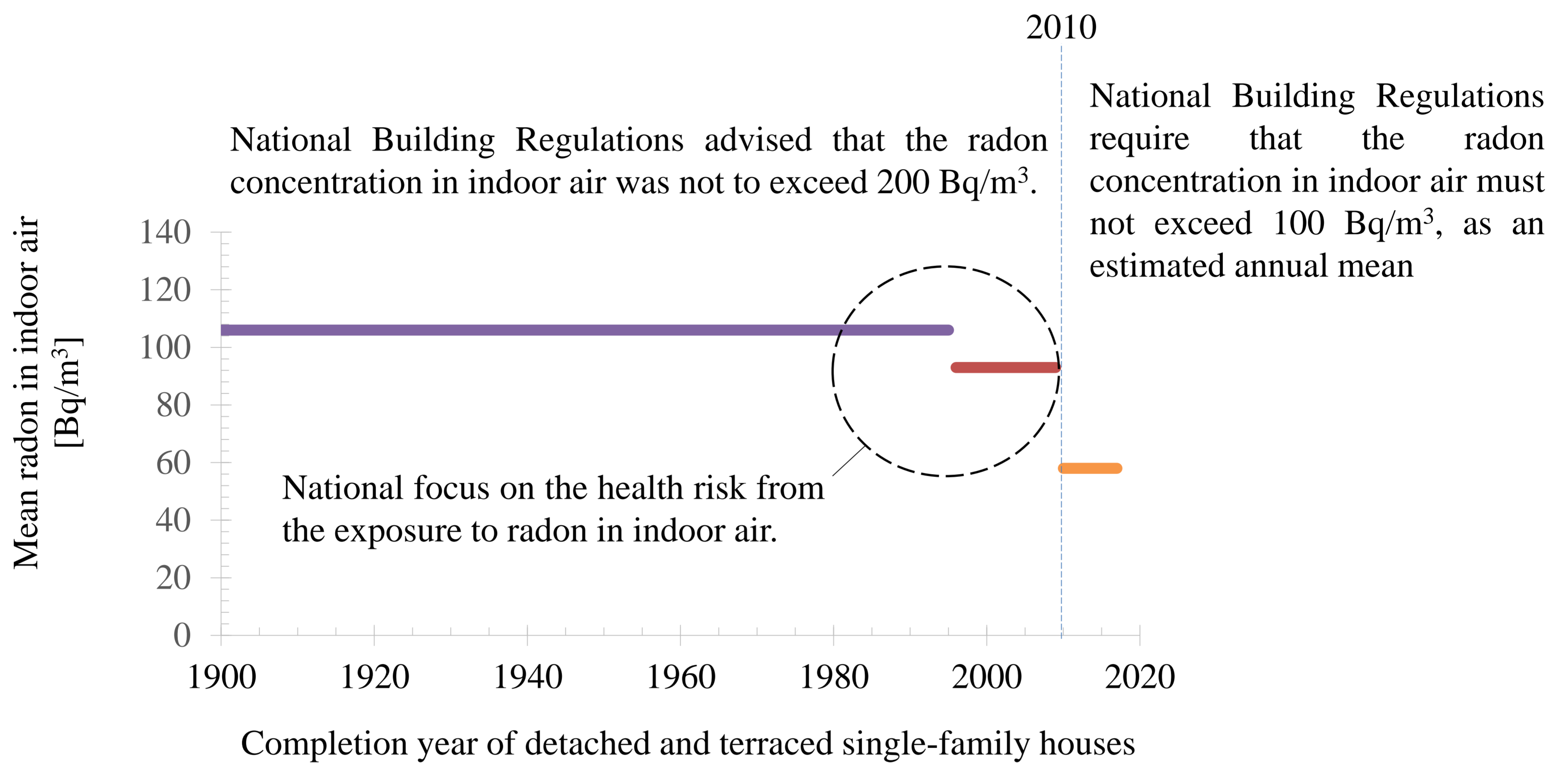
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Outcome of radon provisions on radon levels in homes

Torben Valdbjørn Rasmussen

Department of Building Technology and Process, BUILD, Aalborg University, Copenhagen

Do radon provisions in National Building Regulations have a positive effect on radon levels in homes?



Yes radon provisions in National Building Regulations do have a positive effect on radon levels in homes.

1. Introduction

The World Health Organization, WHO evaluate that radon is responsible for 3% to 14% of lung cancer cases in different countries, as radon provides exposure to ionised radiation. This noble gas is naturally formed in the ground and penetrates through the ground slab, basement walls, and floors into buildings, and if it is not ventilated, much higher exposure can occur indoors than outdoors, which is where human exposure occurs.

The WHO recommends 100 Bq/m³ for the maximum concentration of radon in indoor air.

The impact of radon on humans show that radon is the second-largest cause of lung cancer (smoking tobacco is still the primary cause). If people spend their whole lives in a building with an average radon concentration that exceeds 200 Bq/m³, their risk of lung cancer is higher than 1%. This is higher than acceptable levels in other contexts for a single-factor risk.

Since 2010, Danish buildings must be constructed to ensure that the annual mean radon concentration in indoor air is below 100 Bq/m³. Buildings completed earlier are recommended to meet the same level.

3. Acknowledgement

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2. Method

A survey was conducted in which the radon concentration as the estimated annual mean radon concentration in indoor air in detached and terraced single-family houses was measured in 3,762 individual houses, during the heating season.

Detectors used were closed passive etched track detectors made from CR39 plastic film placed inside an antistatic holder. The number of detectors necessary depended on the number of rooms, size of the open space, and number of floors. However, two detectors, at minimum, were used in the homes.

Homes represented typical houses and as a group, reasonably reflect the number completed every year between 1900 and 2018 in Denmark.

The radon concentration was calculated and used for statistical analyses. Statistical analyses include radon concentration, minimum value, maximum value, standard deviation, and median.

Radon measurements were based on directly integrated measurements; thus, no indirect measurements (geological samples, soil gas measurements, external gamma radiation, etc.) were performed in this survey.