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Comparison of Natural Radioactivity Removal Methods for Drinking Water Supplies: A Review

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Abstract: In this study, natural radioactivity removal methods have been compared for present drinking water supplies (privately owned wells or small water works) which have radioactivity values higher than determined standards (WHO & EPA standards). There are several methods known to remove radioactivity from water such as aeration to remove "Rn222", adsorption by granular activated carbon (GAC) to remove "Uranium", ion exchange methods (IX) to remove "Ra266 and Ra288", reverse osmosis (RO) to remove "Gross alpha and Gross Beta, Uranium" and various adsorption methods to remove other radionuclides. Main factor of preferring a removal method depends on radioactive material's physical and chemical features. However, the methods have to be tested for different types of water qualities. In this aspect method's designation, setup, cost, advantage/disadvantage, yield ratio, waste, equipment, source water quality has been considered.

Keywords: Natural radioactivity, Removal methods, Drinking water, GAC, RO, IX