Nitrates in Ground Water: Using a model to simulate the probability of nitrate contamination of shallow ground water in the conterminous United States

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Introduction

Nitrates from livestock, an essential nutrient required for animal growth and development, are a common source of nitrate in drinking water. However, too much nitrate in drinking water can cause symptoms similar to those of consuming contaminated drinking water. Nitrate levels above 10 ppm, which is considered safe by the World Health Organization, can cause symptoms in infants that range from nausea and vomiting to brain damage. High nitrate levels can also affect the development of cancerous tumors in the body.

The National Water Quality Assessment (NWA) Program has collected information on nitrate and other water quality contaminants in the United States since 1984. These data, collected in 2,645 MSAs, are used to create a spatial model that simulates the probability of nitrate contamination in shallow ground water.

Nitrates are a common contaminant in shallow ground water, and their presence can affect drinking water quality. The model developed in this study uses data from the National Water Quality Assessment Program to simulate the probability of nitrate contamination in shallow ground water.

Model development

The model was developed using data from the National Water Quality Assessment Program. The model uses a variety of input variables, including the probability of contamination, to predict the probability of nitrate contamination in shallow ground water.

The model was validated using data from the National Water Quality Assessment Program. The model was found to be effective in predicting the probability of nitrate contamination in shallow ground water.

Probability of Nitrate Contamination of Shallow Ground Water

The national probability map is divided into eight probability classes, ranging from very low to very high. The map shows the probability of nitrate contamination in shallow ground water in different areas of the United States.

The map highlights areas where nitrate contamination is likely to occur, such as areas with high population density and areas with high nitrification activity. The map can help resource managers and scientists assess the vulnerability and susceptibility of shallow ground water to nitrate contamination.

The map is a valuable tool for resource managers and scientists, as it can be used to identify areas where nitrate contamination is likely to occur. This information can be used to develop strategies to reduce nitrate contamination in shallow ground water.

The map is available for download on the U.S. Geological Survey website. The map can be used to assess the vulnerability and susceptibility of shallow ground water to nitrate contamination in different areas of the United States.

Conclusions

The probability of nitrate contamination in shallow ground water can be assessed using a model that simulates the probability of contamination. The model can be used to identify areas where nitrate contamination is likely to occur, and it can help resource managers and scientists develop strategies to reduce nitrate contamination in shallow ground water.

The model is an important tool for resource managers and scientists, as it can be used to identify areas where nitrate contamination is likely to occur. This information can be used to develop strategies to reduce nitrate contamination in shallow ground water.

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