

Groundwater Contamination by Highway Salting

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ABRIDGMENT

•THIS is a brief discussion of the phenomena involved in groundwater contamination by highway salting as understood at this time.

Of the salt applied to the highways a part eventually lodges in or on nearby soil. Subsequent rainfall and snowmelt that enter the ground carry some salt down to the water table in waves or pulses and inject it into the continuous slow underflow of groundwater in the saturated zone below the water table. In the saturated zone, the salt moves laterally along with the groundwater, which in general ultimately discharges into surface streams.

In shallow unconfined aquifers in unconsolidated relatively permeable materials, the chloride concentrations in groundwater near salted highways fluctuate strongly, reflecting the interplay between surges of salty water carried down from the soil above and continuous flushing and dilution by laterally moving groundwater in the zone of saturation. At present it appears that under these conditions the fluctuations are cyclic annually, and that generally the chloride content increases only until a balance is reached between "salt recharge" and the continuous flushing and dilution by groundwater. The balance attained varies from place to place; generally it is such that the chloride concentration is much less than 250 ppm (hence undetectable by taste) during the entire year, but in some places it exceeds that figure at peak times or throughout the year. Where the chloride content continues to increase (say to 1000 or more ppm), fortuitous combinations of circumstances are responsible.