

LET'S LEARN ABOUT THE NITROGEN CYCLE! (UNDER WATER)



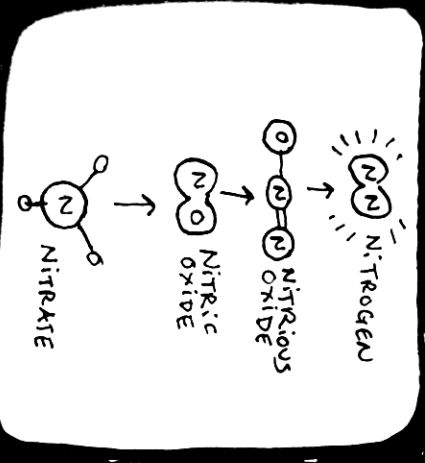
small science collective (09)
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ALL LIVING ORGANISMS PRODUCE WASTE, THE MOST FREQUENT BY-PRODUCTS OF DECOMPOSITION ARE NITROGEN BASED. UNDERWATER, THESE WASTE PRODUCTS WILL FIRST BREAKDOWN INTO AMMONIA. AMMONIA CAN BE VERY TOXIC TO UNDERWATER LIFE. LUCKILY WE HAVE THE AID OF MICRO ORGANISMS TO WORK IN TANDEM AND MAKE THIS WASTE NON-TOXIC, EVEN BENEFICAL! THIS PROCESS IS REFERRED TO AS THE **AMMONIA NITROGEN CYCLE**

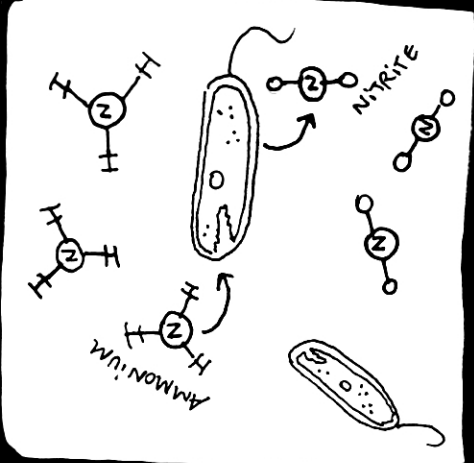
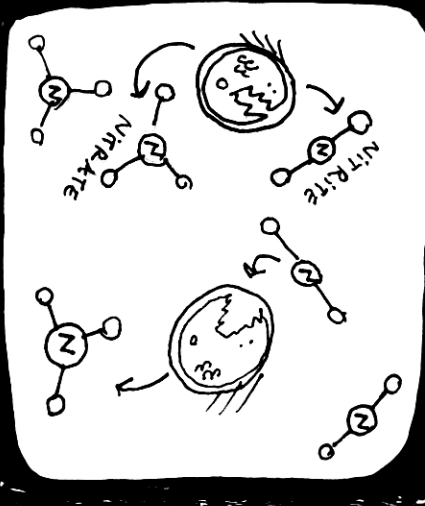
DECOMPOSING PLANT MATERIAL



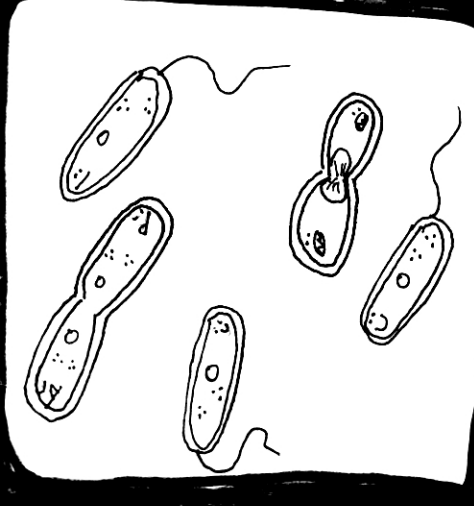
THE LAST PHASE OF THE CYCLE ALTERS NITRATES INTO NITROGEN GAS WHICH EVAPORATES OUT OF THE WATER. NITROGEN IS A VERY IMPORTANT ELEMENT AS WELL AS BEING A STAPLE FERTILIZER FOR ALMOST ALL PLANTS IT MAKES UP RAOUGHLY 78.08% OF EARTH'S ATMOSPHERE.



AS NITRATES ARE CONVERTED AND BUILT UP ANOTHER SET OF BACTERIA BEGIN TO TRANSFER THEM INTO NITRATES THESE ARE DENITRIFYING BACTERIA. NITRATES ARE NON TOXIC UNLESS THEY BUILD UP INTO LARGE QUANTITIES (SOIL PPM). THEY MAY ALSO BE USED AS FERTILISER FOR PLANTS.



NITRIFYING BACTERIA ARE THE MICROSCOPIC ORGANISMS THAT CONVERT AMMONIA INTO A MORE HARMLESS FORM; NITRATE (NO₃). FIRST ONE TYPE OF BACTERIA CONVERT AMMONIA (NH₃) INTO NITRITES (NO₂). NITRITES ARE STILL TOXIC.



AT FIRST THESE BACTERIAL COLONIES ARE SMALL. WITH A RICH SUPPLY OF OXYGEN (O₂), COOLER WATER AND DIM LIGHT THE BACTERIA WILL REPRODUCE THROUGH BINARY FISSION. A LARGE NITRIFYING COLONY IS A GOOD THING, THE MORE OF THEM THE MORE WASTE THEY CAN HANDLE!