Measurement of Nitrate and Nitrite Concentration in Drinking Water Resources of Ardabil City

Abstract:

Background & Objectives: Water quality is very important to humans because it relates directly to their welfare and comfort, nitrate ions is considered as conventional pollutants in surface and groundwater, Nitrate and nitrite are present in the environment mainly in solution form. And naturally by the oxidation of nitrogen compounds by microorganisms in water, soil and small amounts are produced by electrical discharge like lightning. The ions also entered into the water resources from the raw wastewater from domestic, industrial and agricultural. Water containing high concentrations of nitrate (greater than recommended amounts per standards) has undesirable effects on human health. Accordingly, nitrate and nitrite levels in public water supplies must be regularly controlled and tested. Due to the variety of water resources of Ardabil city This study were carried out to measure the concentrations of nitrate and nitrite in drinking water resources of Ardabil in two year ,۱۳۹۱ and۱۳۹۲, and compared with national and international standards.

Methods: In this descriptive cross - sectional, a total of ۱۰۰ samples, ۱۶ samples of output and input water treatment plant, ٤٨ samples from the wells of water in Zaranas area and ۳٦ samples from wells inside the city during high rainfall and low water between ۹۱ and ۹۲ picked and tested in ٦ hours since the samples were picked and tested by the ion chromatograph.

Results:Average concentration of Nitrate and Nitrite in treatment plant and Zaranas wells which provide more than ۹٥٪ of drinking water of Ardabil are respectively(۳/۷٥۰ mg/l , std.devition=۲.۱۲۹ and ۰/۰۲۳٥ mg/l, std.devition=۰.۰۱٦۷)and the average concentration of nitrate and nitrite of the well of inside city respectively are (۲۸/٥۲mg/l , std.devition=۱٤/۲۰ and ۰/۰۳۱ mg/l, std.devition=/۰۲۲). Schoeller diagram classification all water suppliers of Ardabil city are in the good and acceptable area . also there was no significant difference between nitrate in treatment plant and the well which located outside of city(p=۰/٤۹۳).however ther was significant difference between nitrate in treatment plant and the well which located inside of city(p=۰/۰۰٦).and also there was significant difference between nitrate in the well of outside and inside city. But about nitrite except between inside and out side of city (p=۰.۰۳۰) there was no significant differencebetween other sourses. In this study there was significant difference between nitrate in wet seasons of drought(p=۰.٤٦۲) but there was

ignificant difference between between nitrite in wet season seasons of drought (p=۰.۰۳۸)

Conclusion: The average concentration of nitrates and nitrites in all studied samples was within standard limits.. And considering that more than ۹۵٪ of drinking water provide of water treatment plant and outside wells of the city , comes highly desirable nitrate from these sources between ۳.۷۵ -۸.٤۹ ppm. However, the concentration of nitrate in the well of inside city being Relatively high in compared two other sources which studied because is they are located in urban areas and the possible influence of sewage and surface water and the texture of area. Considering that the water of inside wells diluted before distribution in city its impact on the quality of drinking water in the distribution system will be insignificant.but this wells and all sourses should be continuous monitorind**.**

Key words : Nitrate ,Nitrite , Drinking Water Resources, Ardabil , pollutant