

## **A Close Study on the Nitrate Fertilizer Use and Environmental Pollution for Human Health in Iran**

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**Abstract :** Nitrogen accumulates in soils during the process of fertilizer addition to promote the plant growth. When the organic matter decomposes, the form of available nitrogen produced is in the form of nitrate, which is highly mobile. The most significant health effect of nitrate ingestion is methemoglobinemia in infants under six months of age (blue baby syndrome). The mobile nutrients, like nitrate nitrogen, are not stored in the soil as the available forms for the long periods and in large amounts. It depends on the needs for the crops such as vegetables. On the other hand, the vegetables will compete actively for nitrate nitrogen as a mobile nutrient and water. The mobile nutrients must be shared. The fewer the plants, the larger this share is for each plant. Also, this nitrate nitrogen is poisonous for the people who use these vegetables. Nitrate is converted to nitrite by the existing bacteria in the stomach and the Gastro-Intestinal (GI) tract. When nitrite is entered into the blood cells, it converts the hemoglobin to methemoglobin, which causes the anoxemia and cyanosis. The increasing use of pesticides and chemical fertilizers, especially the fertilizers with nitrates compounds, which have been common for the increased production of agricultural crops, has caused the nitrate pollution in the (soil, water, and environment). They have caused a lot of damage to humans and animals. In this research, the nitrate accumulation in different kind of vegetables such as; green pepper, tomatoes, egg plants, watermelon, cucumber, and red pepper were observed in the suburbs of Mashhad, Neisabour, and Sabzevar cities. In some of these cities, the information forms of agronomical practices collected were such as; different vegetable crops fertilizer recommendations, varieties, pesticides, irrigation schedules, etc., which were filled out by some of our colleagues in the research areas mentioned above. Analysis of the samples was sent to the soil and water laboratory in our department in Mashhad. The final results from the chemical analysis of samples showed that the mean levels of nitrates from the samples of the fruit crops in the mentioned cities above were all lower than the critical levels. These fruit crop samples were in the order of: 35.91, 8.47, 24.81, 6.03, 46.43, 2.06 mg/kg dry matter, for the following crops such as; tomato, cucumber, eggplant, watermelon, green pepper, and red pepper. Even though, this study was conducted with limited samples and by considering the mean levels, the use of these crops from the nutritional point of view will not cause the poisoning of humans.

**Keywords :** environmental pollution, human health, nitrate accumulations, nitrate fertilizers

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