

ABSTRACT

The rapid growth of the population drives the demand for agricultural products. Farmers turn to pesticides to help them fulfil this demand. Improper handling of pesticides causes the pesticide to runoff into the environment, especially the freshwater reserve. This phenomenon will cause a significant health threat to the people around the affected area. International organizations and national governments have created Maximum Residue Limit (MRL) to determine the safety level of water, especially those intended for human consumption. This review aims to assess the safety of freshwater by comparing the concentration of organophosphate pesticide residue in the freshwater sample to the MRL value.

In this narrative review, the data was obtained from articles searched in notable online databases using the Boolean technique. The reviewer then collected the data by extracting it from said articles. The extracted data was the concentration of organophosphate residue in freshwater and the analytical method used.

The reviewer found 51 articles that detected organophosphate pesticide residue from around the world, with a 24.58% sample exceeding the MRL value. Groundwater is considered the safest source of drinking water. For the analysis method, most researchers use solid phase extraction (SPE) as their extraction method and gas chromatography (GC) as their analytical instrument.

Keywords: Freshwater Contamination, Organophosphate Pesticide, Maximum Residue Limit.