

EFFECT OF THE CADMIUM CONCENTRATION IN PHOSPHATE FERTILIZERS ON HEALTH AND PROVIDE STRATEGIES FOR THEIR CONCENTRATION REDUCTION IN ENVIRONMENTS.

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INTRODUCTION

Nowadays fertilizers are used as a means to achieving the maximum production per unit area [1]. Inappropriate use of fertilizers and chemical pesticides, particularly phosphate fertilizers and organophosphate pesticides has contaminated the soil and water [2]. Some inorganic fertilizers due to heavy metals (e.g. cadmium, lead and arsenic) and radioactive particles are hazardous for the environment and human health. These hazardous substances and pollutants usually enter through raw material of fertilizer or are added to it in factories during fertilizer production processes. These materials can be classified as a Nonpoint Source Pollution (NSP) [1]. These pollutants are widely distributed in soil and their source is not specified, each year thousands of these metals are entered in the soil on a global scale. Unlike most organic pollutants, these metals don't break down by organisms and most of them produce stable compounds in the nature. These metals are strongly absorbed by living tissue and their departure from the tissue is difficult [2]. Since nitrogen and potassium fertilizers against phosphorus fertilizers, containing traces of heavy metals, the purpose of this study is to investigate the transfer of cadmium in phosphate fertilizers to plants, humans, cumulative effects on health and provide solutions to reduce their concentration in the soil [1].

MATERIALS AND METHODS

Cadmium is a dangerous metal which after the consumption, spread into natural ecosystems in different ways. In addition to soil and water contamination it has entered the food chain and cause fatal cancers in human, including cancer of the liver and kidneys and other injuries, including the incidence of sterility and infertility, dysfunction of kidney, immune system and central nervous system (incidence of diseases such as MS and Parkinson) and softening of bones. It seems as well as to be a factor influencing the development of heart diseases and hypertension [3]. One can conclude that, to achieve a healthy environment without these pollutants can be served two ways: remove these materials from the food chain to prevent accumulation of cadmium in environmental resources and determine the maximum allowable standards for various sources.

RESULTS AND DISCUSSION

New ideas in industry and agriculture, such as the use of cadmium separating solvents in the manufacturing process of these fertilizers, proper management programs to reduce fertilizer and chemical pesticide consumptions can be the ultimate goal of sustainable development, with emphasis on more effective prevention than treatment and healthy life balance is achieved.

Keywords: soil pollution, phosphate fertilizers, [cadmium](#), human and environment health,

REFERENCES:

1. Mohajer, *Effects fertilizers containing heavy metals and human health and routes of transport of these metals in the food chain, the first Congress of fertilizer challenges in Iran*. 2009.
2. Zarabi, *Effects of harmful consumption of phosphate fertilizers and pesticides on the life cycle of ecosystems*,. Environmental Engineering Conference, 2005.
3. *Safety evaluation of certain food additives and contaminants in food*. Geneva, World Health Organization (WHO Food Additives Series, No. 64;



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summary in FAO/WHO 2010). WHO (in preparation), 2010.