

Water contamination with metabolites of the herbicide chloridazon and the possibility of their elimination in the technological process of water treatment

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ABSTRACT

Chloridazon was an herbicide used on sugar beet crops. Its use has been banned, but its metabolites chloridazon-desphenyl and chloridazon-methyl-desphenyl are still present in the environment. As they pose a threat to human health, the best method to remove them from the water must be found. The pilot research installation for the removal of chloridazon metabolites from water consisted of an ozone producing PROTEC 145 OZ UV lamp working at a dose of 400 to 4,000 J/m² and biological activated carbon filters (BACF). The content of metabolites during the removal process was determined by high-performance liquid chromatography coupled with tandem mass spectrometry. Based on the results of the research conducted for water contaminated with chloridazon metabolites, the possibility of reducing the concentration of chloridazon-desphenyl down to the limit of detection was confirmed. The results show that the UV lamp and BACF can be effective in removing organic pollutants from the water, but their efficiency depends on the type and concentration of the contaminants.

Keywords: Herbicides; Chloridazon; Chloridazon-desphenyl; Chloridazon-methyl-desphenyl; Metabolites; Water treatment; Water contamination

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